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THE ADDED RESPONSIBILITY OF THE SURGEON WHEN CALLED ON TO TREAT SURGICAL LESIONS IN THEIR EARLIER STAGES *

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The easier the diagnosis the worse the prognosis. This statement hardly needs further comment or illustration. It is especially true in malignant disease. When the surgeon is able to recognize cancer by its clinical appearance the relative prognosis is bad. Complete operations in this stage yielded 30 per cent. or less of permanent cures.

When the malignant disease cannot be recognized clinically because of its early stage, but is diagnosed at the exploratory incision by its gross appearance, with or without the aid of a frozen section, the prognosis for an ultimate cure is best, provided the complete eradication of the disease immediately follows the exploratory diagnosis. My investigation of the statistics up to date seems to show that the probabilities of a cure are at least 80 per cent. This, of course, varies with the position of the lesion.

If at this exploratory incision, however, the malignancy is not recognized and a piece of the lesion is removed for diagnosis, or even when the entire local lesion is removed with a narrow margin of healthy tissue, and then, later, after the microscopic diagnosis, the complete operation is performed, the probability of a cure is distinctly less than after a complete operation in a later stage when the diagnosis can be made from the clinical symptoms.

From an investigation of the material recorded in the laboratory of the Johns Hopkins Hospital Surgical Clinic, this statement can be made with certainty. So far as my personal experience goes, it is incontrovertible.

We may safely state therefore, that in the earlier stages of surgical lesions the diagnosis is the major part of the surgery; the operation is minor. It is expert and delicate surgery, nevertheless, and the immediate and ultimate results are the best. In this stage treatment is the test of the diagnostic technic.

In the later and latest stages of the surgical disease the diagnosis becomes the minor part, the operative surgery the major, and the results, both immediate and permanent, are worse. Here we have the test of operative technic.

The more one investigates critically the ultimate results of diseases subjected to surgical treatment, the more one becomes impressed with the fact that surgery in the hands of the majority of operators is usually a little behind the disease.

In the early stages the clinical manifestations are so slight, and the lesion seems so insignificant, that even when the diagnosis is correctly made, the relative "favorability" so impresses the surgeon that he is very apt not to do enough. If he unfortunately makes a mistake in diagnosis the result is even worse.

In the later stages of the disease the apparent hopelessness of the condition checks his enthusiasm to be radical, and here again he often fails to accomplish the possible cure.

This investigation of the ultimate results in relation to the stage of the disease, its diagnosis and treatment, demonstrates that there is room for improvement in both. The investigation should have for its object the development of a method of recognition and treatment which will allow a surgeon to be ahead of the disease, and thus increase the number of permanent cures in every stage. There is no doubt that the best opportunity for a cure is in the early stage, but we have sufficient evidence to demonstrate that in later stages more radical procedures properly performed under improved anesthesia and technic have accomplished permanent cures, and there is no reason why these should not be increased in number.

We must not rest satisfied with our results. We must not continue to follow any routine method of diagnosis and treatment, unless it is constantly controlled by the evidence of the ultimate condition of the patient.

How few surgeons in this country really know their immediate mortality, which is evidence most easily obtained. Fewer still have a comprehensive and accurate knowledge of their ultimate results, evidence more difficult and costly to obtain.

METHODS OF DIAGNOSIS

In brief, our available methods of diagnosis are not always employed. The clinician usually neglects laboratory tests; the strictly laboratory diagnostician does not put sufficient stress on the clinical investigation. There is no doubt that in many instances we are handicapped, especially in the early stages of the disease, by an absence of clinical evidence and by lack of an exact laboratory method, and in some cases the exact laboratory method may have an element of danger. For example, in the majority of cases the excision of a small piece for microscopic diagnosis has an element of danger. In malignant disease it seems to increase the probability of dissemination. We may be able to develop a technic which can reduce or eliminate this danger. In my own experience such an exploration should never be done

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* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

except in special cases. In cases in which the local and complete excision of the visible and palpable lesion would be unnecessary, mutilating and dangerous if the lesion were benign, we may be compelled, in a few instances, to excise a piece for diagnosis. In such cases the excision of a small piece should be followed by the cauterization of the wound. The electric or Paquelin cautery is best. If the microscopic diagnosis shows that the lesion is malignant, the necessary operation should follow as quickly as possible.

In this paper I cannot go into the detail of the methods of clinical and laboratory diagnosis for the different lesions in the different localities, but when I discuss these different lesions I shall be able to call attention briefly to the more important facts.

CLINICAL DIAGNOSIS

When one investigates a large number of clinical histories of any of the different surgical lesions, he is at once impressed with the difficulty of recording the clinical manifestations successfully and in detail. This is especially true when we have before us the problem of estimating the minimum symptoms of any disease which justify surgical treatment. Most patients come under observation in the later stages: the maximum symptoms are present; the diagnosis is not difficult; the indicated operation is generally clear. As stated before, however, we should not be satisfied with either the immediate or permanent results of treatment in this stage. Now, when we come to investigate these histories and look for the recorded statements of the symptoms of the disease in its beginning, they are either conspicuous by their absence, or too meager to be useful.

This state of affairs is undoubtedly due to the fact that the patient is chiefly impressed with the symptoms from which he suffers at the time of examination and treatment, and often does not remember the symptoms of the beginning of the trouble. In addition, the mental horizon of the surgeon and his assistants seldom extends beyond the present state of the disease. Their interest is concerned chiefly with the diagnosis and treatment of the disease in its present state. This, of course, is of the utmost importance. The patient seeking help demands relief; he cannot be put back into the beginning of the disease; he must be treated at the time when he first seeks help.

The majority of us fail, nevertheless, to recognize that a clinical history which carefully records all the possible etiologic factors, the symptoms at the beginning of the trouble and the development and picture of the clinical course, as well as the present condition, is not only of added value for the diagnosis and treatment of this patient, but, in addition, leaves a record which, when multipled by many others, allows us to picture this disease in its beginning and to formulate the minimum of symptoms, so that when patients fortunately seek advice and help in the beginning or the earlier stages we shall have prepared ourselves for that recognition and appropriate treatment which will yield the best immediate and permanent results.

At present so few patients seek advice in the early stages that we must depend on the clinical investigation of the larger group who come under our observation in the later stages for the evidence of the clinical picture in the earlier stages.

The more evident the symptoms and the easier the diagnosis, the worse the clinical history of the early stages. We must recognize that the more careful and elaborate clinical records of cases of this type are of the utmost importance for our own education and development and for the benefit of our immediate and future patients. In time of peace prepare for war. In this period of the treatment of disease in its later stages, we must prepare ourselves for the diagnosis and treatment of the disease in its very beginning and earlier stages. At present the educated patient who seeks help early is rare, but will be increasing in numbers, and we must prepare ourselves for the added responsibility.

The taking and recording of these more elaborate histories require a larger number of assistants. At present hospitals connected with medical schools are better prepared to meet these greater requirements. The third-year and fourth-year medical students can be taken into the wards as clinical clerks. In the experience of the Johns Hopkins Hospital, the records have been much better since students have been admitted to the wards. At present a patient in the ward is more carefully investigated than a private patient. There is no reason why the students should not be assigned to the private wards also.

A clinical history cannot be taken at one sitting. In emergency cases, when we are confronted with the urgency of immediate diagnosis and treatment, we should take only the time necessary for immediate diagnosis. The patient should not be fatigued by a prolonged interview. After the operation the clinical record can be completed. In chronic cases the history should be taken two or more times. All histories should be checked by the more experienced senior surgeon, and should be added to from time to time, when the patient is written to as to the ultimate results.

For a number of years I have been retaking the history of patients who have returned to the hospital for examination, and I have been surprised at the frequency with which additional important data have been obtained.

A clinical record, therefore, has two distinct functions: first, and most important, for the needs of the patient; second, an elaborate and accurate record which, when multiplied by many others, will be valuable for the investigation of the etiologic factors and the minimum of symptoms of the earliest stage of the disease, so that we can educate people to seek advice in this stage, because we know even now that treatment in this stage yields the best immediate and permanent results.

LABORATORY DIAGNOSIS

No matter how exact the science of medicine may become in its diagnosis with methods of precision, the art of medicine, which rests on the clinical investigation and deductions, should never be neglected. Laboratory investigation requires a different training, but much of this is available for any physician. Some must be delegated to experts who give their entire time to this department. The time is not far distant when special laboratories for these methods of diagnosis which will be available to all physicians in the different parts of this country will be established.

At present the easier and more available laboratory methods of diagnosis are not employed as a routine, but only in special cases. The more my experience grows, the more do I become convinced that many of these tests should be employed as a routine procedure.

The Wassermann test for syphilis and some exact test for tuberculosis as a routine procedure would be a benefit not only to the patient but also to the community at large.

The ordinary examination of the urine is usually made, but the test for kidney function has become a routine practice in but few, if any, clinics. My experience teaches me that this test is one of the most important in the estimation of the vital resistance of the patient before operation.[1]

In bone lesions the test for Bence-Jones bodies is usually neglected. Undoubtedly other methods of precision will be developed in the examination of the urine. The test for pancreatic function is at present not conclusive. The examination for diacetic acid and acetone should be a routine procedure before, as well as after operation. In non-diabetic cases its presence indicates that the patient needs more food; in some cases, without this check, we may restrict food too much before and after operation. It is the most valuable test in diabetes.

A complete blood-count with a differential count of the leukocytes should seldom be neglected in the investigation before operation. There is no space here to discuss the importance of anemia and the changes in the number and character of the leukocytes as a help in diagnosis and treatment. The estimation of the blood-pressure before, during and after operation is becoming a routine procedure.[2] The literature shows the growing interest in this instrument of precision.

The roentgenograph and the Roentgen fluoroscope have taken such an important place in laboratory investigation that I need not take space here to discuss them. To develop the interpretation of this laboratory method one should repeatedly bring together the roentgen-ray findings before operation and the picture found at operation. Unfortunately at present the one who takes the roentgenogram seldom sees the operation, and the one who operates looks but casually at the plates. The surgeon has as much to learn by the comparison of his roentgenograms and the operative findings as the roentgenologist. Both are making unnecessary mistakes by neglecting the observations of the other.

The microscopic picture of the removed disease is investigated chiefly by the pathologist who as a rule is given meager, if any, opportunity to know the clinical symptoms, while the surgeon rarely adds to his knowledge of the disease by a personal study through the microscope.

No surgeon can develop the diagnosis of surgical diseases by their gross appearances when exposed at the operation without the aid of the microscope. He does not realize the importance of this, because in at least 90 per cent. of benign and malignant lesions the patient seeks advice when the diagnosis can be made clinically. The surgeon is therefore able to perform the operation with a large amount of certainty without the aid of either the gross appearance or the microscopic sections; but when the remaining 10 per cent. of patients present themselves to him he finds himself handicapped. He then seeks the help of the pathologist who is equally handicapped, because of his lack of familiarity with the clinical manifestations. Both make mistakes because their education is incomplete. The surgeon expects too much of the pathologist; many pathologists are too certain of their frozen-section diagnosis.

As a matter of fact, the surgeon has a better opportunity to develop the diagnosis of benign and malignant lesions than the pathologist, because he comes in contact with the clinical manifestations in an entirely different and more intimate manner. After the complete removal of the clinically diagnosed disease he has the opportunity to cut into it; to observe its gross appearance; to educate his sense of touch with the finger and the knife, and to examine it alone, or with the pathologist, under the microscope. In this way he can train himself to recognize those ten cases out of a hundred in which the diagnosis cannot be made clinically, but must be made immediately by the gross appearance at the exploratory operation with or without the aid of the frozen section. He and the pathologist must know when a frozen section can be depended on for diagnosis and when it cannot. The responsibility, however, rests with the surgeon. He should seek all possible help, but he cannot divide the responsibility, and he should know what to do when in doubt. This differs with lesions in different localities. In breast tumors, when in doubt, perform the operation for cancer, in bone tumors be conservative.

We have sufficient evidence now, evidence that is easily available and will allow the surgeon, if he has investigated the clinical and laboratory records, to know what is best to do for the patient and to prepare himself for the added responsibilities when called on to treat surgical lesions in their earlier stages.

The routine examination of the stools for parasites to explain anemia is usually neglected, nor is blood often looked for, and I am surprised that frequently the general practitioner and even the interns in the hospital fail to examine the stools in cases of slight jaundice. The presence or absence of bile in the stool is of the utmost importance in the history and examination of biliary cases.

Surgeons who are keen on abdominal palpation usually neglect percussion and are very shy on the routine examination of the chest. The roentgenograph, of course, is an instrument of precision for lesions in both the chest and the abdomen, but we have by no means developed our instruments of precision for the examination of the heart, except for the estimation of the blood-pressure. We shall have to wait for the results of the clinicians as to the value of the electrocardiograph.

Routine examinations of nose and pharnyx are now being made in many hospitals, but this is still an often neglected field. The ophthalmoscopic examination of the eye is at present employed only in selected cases.

Enough has been said to demonstrate that with the aid of the available methods of clinical and laboratory diagnosis fewer mistakes should be made, and that even in the earlier stages of surgical diseases accurate diagnosis is possible. At present we should not so much call for newer methods, but should employ in every case those that are well established.

The majority of mistakes in diagnosis are due not to poverty of methods, but to neglect or ignorance of well-established clinical and laboratory tests.

For example, a patient consulted me some months ago for epigastric pain which had been present three years; it was entirely subdiaphragmatic; not only was it present in the epigastrium, but it also extended to the right and left; it was rarely absent; at times it was more intense; there were absolutely no other symptoms. The patient had consulted many physicians; he had been to many institutions for treatment. Every one whom he consulted apparently looked on the case as one of indigestion and without further examination prescribed a diet. He had taken a number of treatments in this country and abroad. I told him that he had had

1. Bloodgood, J. C.: Estimation of Vital Resistance of Patient with Reference to Possibility of Recovery, Ann. Surg., May, 1912.
2. Railway Surg. Jour., 1913, xix, 459.

three thousand dollars' worth of treatment, and not one cent's worth of diagnosis. I sent him to the hospital, where all the routine clinical and laboratory investigations were made. Clinically we could get from the patient only the statement as to his epigastric pain and the loss of weight. He denied luetic infection. The only laboratory test that was positive was the Wassermann. He was then given salvarsan. In two weeks the pain disappeared; in one month he had gained 18 pounds.

In the past year I have had referred to me three cases diagnosed clinically as sarcoma of bone. These patients had been treated with Coley's serum, but refused amputation. In each case no Wassermann test had been made. In each case I found this reaction to be positive, and the periosteal swellings disappeared under salvarsan.

In 1904 I discussed this subject of the diagnosis of surgical lesions in their earlier stages[3] and presented the question more thoroughly in an address[4] before the Lehigh Valley Medical Association in July, 1911.

I have been impressed for years with the fact that surgical technic has advanced more rapidly than surgical diagnosis, and that surgeons, from their accumulated records, should present to the medical profession the minimum of symptoms of the early stage of surgical diseases in which, although diagnosis is more difficult, the immediate and ultimate results of treatment are best. I called these minimum symptoms of the earlier stages the "medical aspects," because patients seldom, if ever, seek the advice of the surgeon in this stage, but often that of their family physician, who has not been trained to recognize the significance of these symptoms as the beginning of a surgical lesion. If, then, we educate the people to seek advice earlier and the family physician to properly interpret these lesser and apparently insignificant signs of future trouble, the surgeon will be called on more often to treat surgical lesions in their earlier stages, and will be forced to educate himself to meet the new requirements in diagnosis and treatment.

It is quite possible that the people may be educated ahead of the medical profession, but, whether they seek the surgeon's advice directly or are referred to the surgeon by the family physician in this earlier stage, the responsibility of the surgeon will be the same. If the surgeon is not prepared to make the diagnosis accurately and follow it with the appropriate treatment, these enlightened people may be worse off than if they had delayed.

The question is, therefore, Shall the people force the profession, or shall the profession educate itself and be prepared for these added responsibilities?

I am impressed with the belief that those surgeons who have educated themselves best have traveled and visited other surgical clinics most. Every experienced surgeon and every surgical clinic, as a rule, excels in some particular method of diagnosis and treatment. We must therefore learn from each other; reading, of course, is valuable, but visiting other clinics is more valuable.

The family physician and the clinician who does not operate must familiarize themselves with the best methods of diagnosis and treatment, so that they will be able to refer their patients to that surgeon who will give them the best methods and insure them the best immediate and permanent results.

I shall try in the remaining space to illustrate the added responsibility of the surgeon when called on to treat certain definite surgical lesions in definite localities in the earlier stages, and discuss briefly the methods of diagnosis and the treatment which should yield the best immediate and permanent results.

PREPARATION FOR OPERATION

In the so-called acute surgical lesions there is little time for preparation and only time enough for those methods of clinical and laboratory investigation which will indicate what to do. The question to be settled is, Is there any indication for operation? Is the danger of immediate intervention less than of delay? As a matter of fact in this group the usual preparation for operation is not necessary, because the operative intervention relieves the patient of such a burden due to the acute condition that the resultant shock is often insignificant and readily borne. This is well illustrated by the difference in the behavior after operation of a patient with a non-strangulated reducible hernia, and of one with a strangulated hernia; between the convalescence from operation for acute appendicitis and for a chronic appendicitis operated on between attacks.

In acute surgical lesions delay affects chiefly the immediate mortality. The difference in the ultimate result is not so marked in the patients which recover.

The minimum symptoms of an acute surgical lesion which will allow a diagnosis in the stage which gives the best immediate and permanent results, are not such a difficult problem, and have been pretty well settled. The people are fairly well educated, and the family physician is more keen, and the surgeon better and better prepared to give the patient the best chances. This is true in acute appendicitis, in intestinal obstruction, perforation of gastric and duodenal ulcer, abdominal wounds and other acute conditions. There is room, nevertheless, for considerable improvement in the earlier recognition. The added responsibility of the surgeon when called on to treat these lesions in the earlier stage is not so evident. The chief danger is in delay, not in action. Laboratory methods of diagnosis, especially the leukocyte count, gastric lavage and the result of enemas, are often very helpful in the early hours.

In the very earliest stages of acute abdominal lesions physician and surgeons fear chiefly that an operation may be performed when the symptoms are due to a non-operative condition, such as pneumonia or diaphragmatic pleurisy with abdominal symptoms, acute exanthems of children, or osteomyelitis with abdominal symptoms, etc. These cases are not, however, very frequent, and more deaths are due to delay on account of this fear than to operations based on mistaken diagnosis. Treatment in the late stages of acute abdominal lesions is the test for operative technic, especially anesthesia, which will be discussed later.

In surgical diseases, when there is no danger from delay, there is opportunity to exhaust every method of diagnosis and to employ every well-established preparatory treatment. The earlier the patient is seen and the less distinct the indication, the more elaborate and painstaking should be the investigation and the more careful the preparation. I believe the evidence will show that at the present stage of our development more mistakes are made by hurrying operative intervention in this chronic group, than by delay in the acute group.[5]

3. Bloodgood, J. C.: The Relation of Surgical Pathology to Surgical Diagnosis, Detroit Med. Jour., February, 1904, p. 337.

4. Bloodgood, J. C.: Medical Aspects of Surgical Diseases, or Preventive Surgery, THE JOURNAL A. M. A., March 23, 1912, p. 829.

5. Bloodgood, J. C.: Estimation of the Vital Resistance of the Patient, with Reference to the Possibility of Recovery, Ann. Surg., May, 1912; Review on Progress of Surgery, Progr. Med., December, 1912.

It has been my experience that this has been more especially so in patients suffering with symptoms suggesting chronic appendicitis. The patient, the family physician and the surgeon arrive quickly at such a diagnosis; people are so well educated in regard to the dangers of appendicitis that they welcome an excuse to have the appendix out. The preoperative treatment and diagnosis are usually insufficient. The appendix is removed through a small incision. The number of patients not relieved is increasing. The lesions usually overlooked are: some type of gastric and colic ptosis; some lesions of the pelvic organs or vaginal outlet; gastric or duodenal ulcer; chronic infections of the gall-bladder; chronic pancreatitis; cancer of the colon, and even renal calculus.

When patients suffering from chronic surgical disease in its earlier stages are really thoroughly studied, the number of mistakes of this kind will be greatly lessened, and by careful preliminary treatment and operation under improved anesthetic technic the number of reoperations will be reduced, the immediate and permanent results improved almost to 100 per cent., and the period of discomfort and disability so shortened that surgery will not be feared as it now is.

ABSTRACT OF DISCUSSION

Dr. A. B. Kanavel, Chicago: One point made by Dr. Bloodgood is well worth consideration, and that is this: When the clinical observations are not borne out by physical examination, we should not of necessity accept the results of the latter. In the present stage of pathologic diagnosis of disease, we are in danger of being too much inclined to depend on a microscopic examination when it is at variance with clinical observation. Clinical observation formed the basis of diagnosis by the older practitioners. In gall-bladder disease there is no need of waiting until the patient has jaundice, when the diagnosis can be made long before the appearance of the jaundice. Why, in appendicitis, wait until the patient has either a general or a local peritonitis? And in ulcer of the stomach or duodenum, why wait for a perforation? We must learn to appreciate the value of an early diagnosis in these cases and that can be done only by having a proper respect for and being able to recognize early symptoms, so that the patient may be sent to the surgeon promptly. The surgeon should teach himself to differentiate medical from surgical lesions, without any relation to which surgical lesion is present, so that he may be prepared to operate on a patient early and not wait for the later symptoms which make the case more severe. In chronic cases particularly, patients are kept waiting for months and even years before they are operated on, and then it is often too late. The greatest difficulty comes in the acute cases of which Dr. Bloodgood spoke. Patients come to us with a typical surgical syndrome; they complain of nausea and vomiting and sudden severe abdominal pain, followed in a few hours by tenderness and rigidity of a portion of the abdomen. It does not matter which particular organ gives rise to that syndrome of symptoms. It means that there is present a severe surgical lesion which demands intervention. It may be an appendicitis, a gangrenous gall-bladder, a peritonitis, a duodenal ulcer, a strangulated ovarian cyst, a diverticulitis, or something else, but, no matter what it is, immediate surgical intervention is indicated. To my mind, if the surgeon and physician would recognize this group of symptoms as essentially a surgical syndrome and would impress that fact not only on the patient but also on the general practitioner, the operation would be performed much sooner than it is now, and more patients would be saved. Unfortunately, the necessity for early surgical intervention is not recognized at a time when the greatest good could be accomplished and the result is that the surgeon is called on to treat a complication rather than an early stage of the condition, and the patient's recovery is made more difficult. I urge that this syndrome be recognized as an acute surgical abdominal crisis, a clinical entity demanding surgical intervention.

Dr. A. J. Ochsner, Chicago: We all recognize the splendid work Dr. Bloodgood has been doing in the past in establishing what we might call clinical and pathologic facts. His work has given us a tendency to standardize our views regarding clinical studies of cases, as well as end results. When we have come to the point at which there is great uniformity in our methods of determining a diagnosis, so that we have definite ideas which are almost universal in our profession, then the time will come when we shall make the fewest mistakes. The matter of etiology, pathology and treatment is quite different. Precedent has shown so far that every time in medicine and surgery when we have felt absolutely sure about anything, we have been mistaken. That is exactly what will happen when we have completed our standardization to a degree of uniformity. It is always well to maintain a beneficent distrust of anything that is settled. In Dr. Bloodgood's work, all of these old, well-established facts that everybody took for granted have fallen down. In the future what Dr. Bloodgood is doing and is teaching us to do will come to the same end. As an instance we may take the plan of determining pathologic conditions during the progress of an operation by means of frozen section. In removing a growth, if the pathologist makes his section through the malignant portion, he diagnoses cancer, but if he has made a section through a portion of tissue that does not show cancer, he will make the opposite diagnosis. He may make many sections but miss the portion which contains the nodule of malignancy. If we accept his diagnosis, we do not do the radical operation and the patient suffers as a result of this systematic, well-established and universally accepted method; we must not forget, therefore, the great importance of not trusting any system. I wish to point out one most important thing that Dr. Bloodgood has told us. He has found that wherever there is a superficial cancer it has developed on a previous lesion. That means that cancer is infectious and that in every one of these cases the infection took place at the seat of a previous lesion.

Dr. Frank D. Gray, Jersey City, N. J.: This question deals with responsibility and I should like to call the attention of the surgeons to two kinds of responsibility which they must shoulder. First, there is the responsibility of never operating with a fixed conception of a diagnosis, because you may frequently find that the diagnosis is wrong and that you must do something other than you had planned. You know how frequently that applies to appendicitis. We operate and find a normal appendix. Something must be found to account for symptomatology. Too frequently in the past, and I fear too frequently to-day, many of us were satisfied with the fact that we had operated and found nothing, and we did not try to find the real trouble. I shall mention a case in point: A nurse in one of our hospitals had, for a year, symptoms referable to the stomach. She had vomited persistently. She had pain beginning from an hour to an hour and a half after eating. She said that she had vomited blood. The history was suggestive of gastric ulcer. Stomach analysis did not confirm the suspicion; there was hypoacidity instead of hyperacidity, yet this, of course, did not disprove the diagnosis of cancer. One of the physicians in charge of the case suggested gall-bladder disease. At the same time we both realized that the appendix might be at fault. I operated with the idea that I would find a gastric ulcer, but an incision revealed nothing pathologic in the stomach. I investigated the gall-bladder region, but it, with the common and cystic ducts, was normal. I extended my incision downward far enough to explore the right iliac region and found a pericolic membrane and an appendix which did not look normal. I therefore removed it. Subsequent histologic examination of the appendix showed a chronic appendicitis. The patient had two definite pathologic entities, Jackson's films and a chronic appendicitis. A gall-bladder operation would have been absolutely useless because there was nothing wrong with the gall-bladder. The same was true of the stomach.

Then there is our responsibility to prevent infection. I take it that most of the profession depend to-day on iodin to sterilize the field for operation. Up to a year ago I had been in the habit of applying iodin when the patient was placed on the table. Many of my colleagues to-day are using that routine. A year ago I was unfortunate enough to operate in a case of double hernia which became infected on one side. The operation was clean and there seemed at first no reason for the infection. The only way in which I could explain the infection was that the iodin had twenty or thirty minutes longer on the left (infected) than on the right (uninfected) side. I therefore concluded that it was a mistake to operate immediately after applying the iodin; I now apply it twelve hours before operation. In emergency cases requiring immediate operation, we use gasoline for the first cleansing. It is dehydrating as well as cleansing, and is a better preliminary for iodin than soap and water.

DR. H. C. SHARP, West Baden, Ind.: The leukocyte count is to me a very important additional guide as to the course the surgeon should pursue in acute abdominal conditions, especially that of appendicitis. The surgeon is frequently much in doubt as to whether immediate operation or treatment by the expectant plan offers the best chance to the patient. I have often found that when wavering on that point, the degree of leukocytosis has determined my course of procedure. When I find this acute condition with a leukocyte count of 16,000 or more, I feel well assured that the condition will go to suppuration, and that the wiser thing to do is to operate immediately, while if I find a low leukocyte count, say 10,000 or 12,000, I am reasonably assured that the patient will recover from the acute atack without suppuration, under the Ochsner method of treatment. I do not wish to be understood as advocating that the degree of leukocytosis should determine whether or not to operate in all cases, nor do I even present it to you as an established and unfailing fact that all acute cases of appendicitis, with a leukocyte count over 16,000 will suppurate, and that all cases with a count of 12,000 will not suppurate, but I have found it a valuable indication to assist in determining my procedure.

DR. JOSEPH C. BLOODGOOD, Baltimore: We need more studies on the ultimate results of a large group of cases of the same lesion in which the question of diagnosis in the early stage and the operation which gives the best result should be considered. There are a number of reasons why we do not have that in this country. It is a very great labor and a great expense to consider a group of say five hundred cases and carefully sift the clinical evidence and the operative results. I know that that is true because I have paid for it myself. Nevertheless, we need such studies in this country and until we obtain conclusions based on such investigation we are not prepared for any uniformity in regard to the method of diagnosis and treatment in our cases. I believe with Dr. Ochsner that we must be careful about being definite, but so long as definite conclusions are checked up by the ultimate results, and these results show that diagnosis and treatment along those definite lines give better results, we must follow those lines. There will be an exception to every rule, but that exception in my experience does not injure the rule. We shall probably never reach the stage of exact diagnosis and treatment in every case, but we can improve our results; we must improve our results, if we wish to have patients come for treatment early. I have been so convinced of this that I wrote some friends of mine, asking for money. I said that I wanted to be able in four months to get the results of every case of cancer treated in Johns Hopkins in the last twenty years, and of every case of tumor of which I had a record in the laboratory. The first check to come in was for five hundred dollars, and feeling that more would come I began the work. I have had a group of ten volunteer students and three volunteer patients, and I find that it is going to cost me about four hundred dollars a month for four months. You can see the cost of an investigation of this kind. It seems to me that the clinicians in this country, spending hundreds of thousands of dollars on marble in their operating-rooms, might cut down on the marble and add to the force in the history room. We are not utilizing our medical students as we should. In Baltimore we have medical students who are getting only their board and lodging do this work because it is an education for them. I believe that in the future we shall be able to keep up the results of our work to date by volunteer students, without cost to the university, because the minute a student writes to Jones and Jones writes back that he is all right, that record is of living interest. The student looks at the history, he examines the tissues in the museum and the slides, and he has a record of the fact that John Jones, whose history and specimens show cancer, is well after twenty years. I think that we can get the hospitals which are spending too much money on unnecessary things to give some of it for clerical help to prosecute this study.

ON THE MECHANICS OF PRODUCTION OF CERTAIN FRACTURES

GREENSTICK FRACTURES, BUCKLING FRACTURES, FLEXION AND TORSION FRACTURES *

EMMET RIXFORD, M.D.

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Much of the etiology of fractures, particularly from the teacher's point of view, may be presented as an application of the principles of practical mechanics—a part as it were of the subject of the strength of materials in engineering. With their characteristic thoroughness the Germans have given a good deal of attention to the mechanics of the etiology of fractures, particularly to flexion, torsion and perforation fractures, but American surgeons have been too much engrossed in the more practical problems of therapy to devote much attention to the somewhat abstruse mathematical considerations as to how the different forms of fracture happen to be produced, and the text-books used by our students have little to say on the subject.

In the multitudinous forms of accident causing fracture, the bones of the skeleton are subjected to stresses which in the ultimate analysis may be resolved into tensile and compressive stresses. These almost never occur singly but always in combination as in flexion, torsion and shearing stress. Their interrelations may be worked out mathematically and by experiment.

To these must be added shock or vibration, the effect of which in producing rapidly alternating molecular tension and compression is difficult to analyze and to estimate except in so far as shock is a determining factor in time. It is at least a sort of exciting cause, for when a bone is under bending or torsion stress almost to the breaking point, sudden shock or rapid and intense vibration will start the fracture, doubtless modifying its direction to some extent. In gunshot fractures, however, in which the shock or vibration is intensified as a result of the velocity of the impact, this factor is of almost completely determining significance.[1]

Impact at low velocity simply tends to displace the bodies as wholes, which displacement, in the case of the long bones of the skeleton, resolves itself into bending or torsion or both, while impact at high velocity in addition

* Read in the Section on Surgery of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Schumacher: Der Mechanismus der Lochfrakturen, Beitr. z. klin. Chir., 1909, lxiii, 81.

tends to produce local bruising or crushing; hence its penetrating power.

The simplest form of stress involved in the production of fracture is simple bending, illustrated in mechanics by the stresses in a beam supported at its two ends and carrying a load between the supports. Compressive stress is developed on the side of the application of the load—a maximum at the particular point of its application—while tensile stress is developed on the opposite side of the beam—a maximum at a point more or less directly opposite. When the load *P* (Fig. 1 *A*) is sufficient the beam will break, the fracture beginning at *T* or *C* according to the properties of the particular material. A cast-iron beam of uniform cross-section will begin to break at *T* where tensile stress is a maximum, while a similar wrought-iron beam will yield by buckling at *C*.

Quite similar are the conditions when a beam is rigidly fixed at one end and made to carry a load at the other. Tensile stress is a maximum at *T* (Fig. 1 *B*) and compressive at *C*.

The shafts of normal adult bones invariably break by yielding to tensile stress rather than to compressive, and in transverse fracture practically always break from simple bending strain as in Fig. 1 *A*, in fracture by direct violence, and as in Fig. 1 *B*, in fracture by indirect or transmitted violence.

The line of fracture is seldom exactly transverse even in a crystalline beam, for in the most rigid beam there is some bending which increases as the line of fracture progresses through the beam, and generally a point is reached at which the cohesion or resistance to the tensile stress in a transverse sense is equal to or less than that in the longitudinal, and the line of fracture takes a more or less oblique direction *a b* or *a c* or both (Fig. 2 *A*). In the latter case a loose fragment is separated off. Note that this loose fragment is on the side of the concavity.

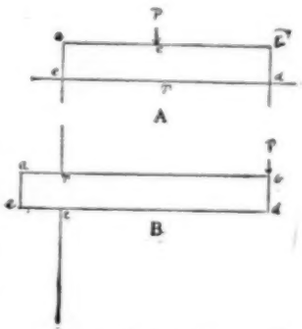

Fig. 1.—Diagrams illustrating *A*, compressive stress; *B*, tensile stress.

In rare cases in which the transverse cohesion is low compared to the longitudinal, simple bending may cause a longitudinal split in the shaft of the bone, the line of fracture at both ends running out on the side of the concavity—the piece broken off is squeezed out, as it were, on that side (Fig. 2 *B*).

While simple bending stress most frequently causes fracture more or less transverse, it may on occasion cause very oblique or longitudinal fractures not only as stated but also as in the case of the femur or the humerus in which the bone is bent inward over a fulcrum on the inner side. The fissure starts between the attachment of the capsule and the trochanter in the case of the femur and the tuberosities in the case of the humerus, and runs down the shaft, generally emerging on the inner side. Such a fracture I have seen which resulted from the use of the Astley Cooper method of reduction of a dislocated humerus, the operator's heel furnishing the fulcrum (Fig. 2 *C*).

In a structure in which there is a definite longitudinal grain as in tough wood subjected to severe bending strain the point *a* (Fig. 2 *A*) is reached before the line of fracture has extended far into the beam, and more or less extensive longitudinal fractures result with bending of the unbroken portions on the side of the concavity; that is, because of the resistance of the broken parts to further bending, they being released from longitudinal tension at the point of fracture, transverse stensile tresses are developed even in advance of the line of fracture and longitudinal fracture results which is often multiple, as in the breaking of a hickory axe-handle (Fig. 3 *A*).

This is precisely the conception of the so-called greenstick fracture; but the lateral cohesion of the shafts of long bones is relatively so large that one would expect this mode of production of incomplete fracture to be rare in children. Yet most of our text-books set forth the greenstick fracture as typical of incomplete fracture in young bones, and of frequent occurrence.

Scudder defines a greenstick fracture as a partial break across the bone with bending at the seat of fracture.

Clinically it is true that fractures with bending occur frequently in children, but it is a question in how far they are of the type described and are properly designated greenstick fractures. My personal observation is to the effect that the true greenstick fracture according to the definition herein given, is the exception among the incomplete fractures in children, which are for the most part buckling fractures, that is fractures by compression, or are complete fractures with splintered ends but with only angular displacement. The only case of greenstick fracture proper which I have seen was in a man of 28, and was of the type illustrated in Fig. 3 *B*.

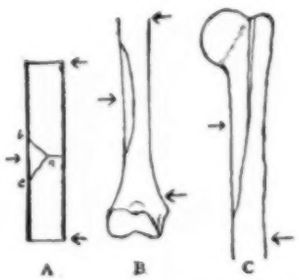

Fig. 2.—*A*, oblique fracture; *B*, longitudinal fracture; *C*, oblique fracture of humerus caused by leverage, in Astley Cooper method of reducing dislocation.

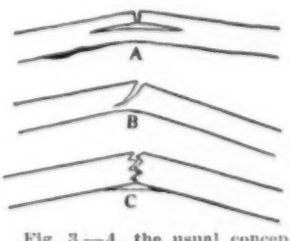

Fig. 3.—*A*, the usual conception of greenstick fracture; *B*, the usual finding in incomplete fracture in young adults; *C*, the usual finding in incomplete fracture of the shafts of bones in children.

Several factors come into play in producing the bent fractures in the long bones of children. The child's weight and strength (important elements in determining the amount of force active in causing many fractures) are small in proportion to the size of the bones in comparison with these relations in the adult. The bones are tough rather than brittle and are surrounded by a much more yielding investiture of periosteum and growing bone than are adult bones, and the greater amount of fat in the child's arm protects the bone from shock.

Transverse fracture with lateral displacement does, however, occur in children if force enough is used, but often in incomplete fractures the force is expended as the tough bone yields and ceases when the bending reaches a certain point short of complete separation of the ends. Under such circumstances the enmeshed jagged splinters offer some resistance to lateral displacement and prevent rotation (Fig. 3 *C* and Fig. 4).

German teachers do not use the term "greenstick" fracture, but account for the bent fractures of children by the looseness and the toughness of the periosteal investiture which stretches and in these cases is supposed not to be torn completely across. Cotton[2] has come to

2. Cotton: Boston Med. and Surg. Jour., Nov. 29, 1900, p. 553.

the same conclusion in his paper on subperiosteal fractures in children.

Roentgenoscopy in many so-called greenstick fractures in children after healing has advanced, even when no attempt has been made to reduce the fracture, will show callus on the side of the concavity as well as on the side of greater separation (Fig. 5). This would indicate either that the periosteum is ruptured or that it has been torn up, that bleeding has occurred beneath it and new bone has grown out into the clot.

While the distinction between the conception of greenstick fracture and complete fracture with jagged splinters and only angular deformity may be looked on as merely a quibble, it has this practical significance: It was common teaching to advise that the incomplete fractures in children be made complete in order to restore proper alignment, but some surgeons (Cotton) deprecate this advice on the ground that completing the fracture is unnecessary and increases the difficulty of maintenance of the correct position.

Fig. 4.—Bent fracture of radius and ulna in child of 12.

For the common form of incomplete fracture of the middle of the shaft of the child's bone, which as said before is

Fig. 6.—Buckling fracture of radius in boy of 8, showing limits of compact bone of the shaft.

really a complete fracture with only angular displacement, simply bending the bones back into place is efficient because there is nothing to break and the soft periosteum will stretch—unless so long a time has elapsed after fracture as to permit of a considerable degree of healing; but perfect reduction in the rare greenstick fracture is almost impossible without completing the fracture, for the reason that reduction requires a certain amount of stretching on the side of the concavity. Therefore, in my opinion, it is proper practice to complete the fracture in such cases by exaggerating the angular deformity present, taking care, however, not to go to the point of tearing apart the periosteum on the side of the concavity, for in general, especially in young bones, the less the periosteum is torn the less opportunity is afforded for the osteoblasts to grow out into the muscles, producing exuberant callus and interfering with subsequent function.

In the long bones of children the medullary canal is smaller than in adults and is especially undeveloped toward the ends. The compact bone of the shaft becomes thin much farther from the ends than in adult bones and the cancellous bone extends correspondingly farther from the epiphyses. In this region, in which incomplete fractures in children's bones are most common, for example, in the radius, the bone, like the wrought-iron beam, breaks by buckling on the side of the compressive stress (Figs. 6, 7 and 8).

Of American text-books on fractures, Hamilton, Stimson, Scudder and Cotton do not so much as mention fracture by buckling.

Of seventeen incomplete fractures of the radius and ulna in children of which we have roentgenograms in Lane Hospital, eight were typical buckling fractures occurring from 1 to 1½ inches above the lower epiphyseal line, half an inch or so below the upper epiphyseal line of the radius, and one was a fracture of the olecranon below its epiphyseal line. Of the eight near the lower end of the radius and ulna, six buckled on the dorsal surface and two on the volar (Fig. 8). The remaining seven were complete fractures with only angular displacement, some of them old enough after fracture and before attempts at reduction were made to show callus, which was quite as marked on the side of the concavity as on the side of the convexity. With the exception of one fracture of the ulna complicating one of the buckling fractures of the radius included above, within 1½ inches of the lower epiphysis, all of these complete fractures with bending were more than 2 inches above the lower epiphyseal line.

While the complete fractures with bending, if taken early, may be reduced by simple bending back into position, the fracture by buckling ordinarily cannot. But the buckling fracture should not be completed by increasing the flexion deformity present as is proper in the true greenstick fracture, but in forcing the bones back into correct position (slight overcorrection is desirable) the bone breaks, beginning at the buckled portion. There is no necessity, however, of so far overcorrecting as to tear the periosteum on the side of the former convexity.

Epiphyseal separation in children as in adults is apparently always the result of tensile stress, the epiphyses being pulled off.

The short bones and epiphyses of young children are almost never broken because of the large amount of cartilage they contain; in adults these bones break by yielding either to compressive or to tensile stress about equally, but, in the matter of relative frequency, individual bones differ from one another. For example, the patella, the olecranon and the lower epiphysis of the humerus are not infrequently broken by being pulled apart, but all three are almost as frequently crushed by direct blows. The os calcis when broken is generally crushed, as is the astragalus and the carpal semilunar.

Shearing stress gives few examples of fracture, yet in the cleavage fracture of the neck of the astragalus, the result of exaggerated flexion at the ankle, the sharp anterior edge of the articular surface of the tibia fairly cuts the head off the astragalus. The body of the bone is crushed and generally pushed out behind the inner malleolus (compare the cherry-stone theory of dislocation of the short bones). The common fracture of the carpal scaphoid may be looked on as of the same sort, but it more probably is a flexion fracture, the styloid of the radius being the fulcrum. From a severe blow on the flexed elbow in line with the shaft of the humerus the olecranon may cleave the humeral condyles apart, or the trochlea may cleave apart the upper end of the ulna.

Of recent years a great deal of interest has centered in the so-called torsion or spiral fractures which we are beginning to realize are far more common than at first supposed. They were formerly classed with oblique fractures, but as the etiology of spiral fractures is better understood and the examples of both are studied, the class of oblique fractures is becoming smaller till it is largely merged in that of spiral fractures.

The long bones are frequently subjected to severe axial torsion, particularly the bones of the lower extremity and the humerus, resulting in typical forms of fracture which are of fascinating interest mechanically and therapeutically.

If a cylinder of approximately uniform constitution be subjected to axial torsion till it breaks, it is found that fracture has occurred in the form of a spiral, the direction of which is invariably the same as the direction of the torsion; that is, if the torsion be to the right (clockwise) the spiral will be a right-handed spiral like an ordinary screw-thread; and, vice versa, if the torsion be to the left the spiral will be left-handed. The fracture is completed by a more or less longitudinal fracture connecting two limbs of the spiral. This may be simply illustrated by twisting axially an ordinary chalk crayon till it breaks.

My attention was first called to the fact that a right-handed twist always produced a right-handed spiral fracture and a left-handed twist always a left-handed spiral by Theodor Kocher in 1899, and later by Dr. Monks of Boston, who made a series of experiments to determine the matter. The mechanics of the production of the spiral was put into graphic or mathematical form by Zuppinger.[3]

Axial torsion develops tensile stress throughout the surface of a cylinder balanced by compressive stress in its interior. When the bone yields to the tensile stress the fissure is propagated along and around the shaft for a long distance in spiral form, and the spiral may encircle the bone two or more times, the bone opening out like a curled shaving from a carpenter's plane. As soon as spiral fracture has occurred, further torsion or unrolling instantly shifts the tensile stresses to the inner surface in a hollow cylinder and the compressive stress to the center. If continued, therefore, the torsion causes longitudinal fracture connecting two of the limbs of the spiral and thereby completing the separation of the two ends of the bone.

In spiral fractures we generally find the spiral running some distance beyond both ends of the fragments (Fig. 9). We also find the periosteum forming a hinge along the longitudinal portion of the fracture in those cases in which there has been no considerable longitudinal force producing shortening; but even in this event the periosteum, though stripped up, is often intact on the side of the vertical part of the fracture, while it is generally completely torn along the spiral part.

3. Zuppinger: Beitr. z. klin. Chir., 1906, lii, 301, and 1909, lxii, 362.

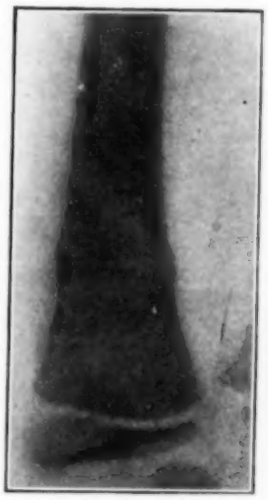

Fig. 7.—Same as Fig. 11, dorsal view, showing lateral spreading of cancellous bone at point of buckling.

Fig. 8.—Buckling fracture with volar flexion in boy of 11.

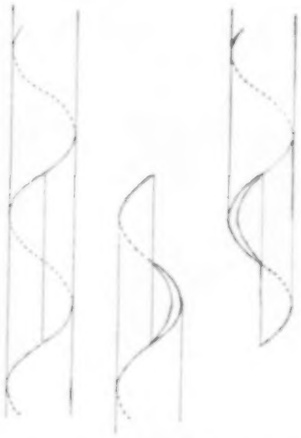

Fig. 9.—Type of spiral fracture before and after separation of fragments.

Theoretically, under torsion stress the entire surface of the shaft of a bone being under tensile stress in parallel spirals, the bone might be expected to break occasionally in two or more parallel spirals. That it ordinarily breaks in but a single long spiral is determined by some weakest point in which the fissure starts, and this is apt to be single. However, it is not at all impossible that search through a large collection of fractured bones might reveal instances of multiple spiral fractures.

Loose fragments which are common in such fractures may sometimes be accounted for by multiple longitudinal fractures, but more often additional bending forces break off one or the other of the long tongues of bone between the spiral and the vertical parts of the fracture.

In actual clinical experience spiral fractures are seldom due to pure torsion, especially in the lower extremities. Weight bearing and sudden muscular effort to escape furnish a severe longitudinal force which, continuing to act after fracture, not only cause the stripping up of the periosteum and furnish the bending stress which breaks off the points of bone or drives them through the muscles and even the skin, but also may be conceived to play some rôle in the production of the fracture in the very beginning, adding a component of longitudinal shearing stress which would have the effect of increasing the pitch of the spiral. Pure spiral fractures are apt to be of higher pitch in young bones than in old, in small bones than in large (Fig. 10).

The vastly greater frequency of left-handed spiral fractures in the right lower extremity and of right-handed spirals in the left lower extremity has been tentatively accounted for on the basis of a spiral grain in the bones resulting from the internal rotation of the lower extremities in the process of development, to which Fleming called attention. In case this internal rotation is inhibited, as in the sympus or siren deformity, the toes invariably point backward. It is obvious enough that as between the upper and lower extremities the latter extremity has a relative rotation of 180 degrees internally, the flexor surfaces being behind instead of in front.

It would require exhaustive experiment to measure the relative resistance of living bones to internal and external rotation, but it would seem that the before-mentioned frequency of left-handed spiral fractures in the right

lower extremity, and vice versa, might be efficiently accounted for by the greater frequency of exposure of the legs to external rotation. Most of such spiral fractures occur as the result of twists of the body, the foot being fixed. Since the foot projects forward or forward and outward it is more exposed to external rotation than to internal, for the other leg is in the way of internal rotation. Furthermore, left-handed spiral fractures are relatively quite as common in the right upper extremity which has not undergone the 180 degrees of internal rotation.

Fig. 13.—Experimental spiral fracture (right-handed) in right femur, periosteal hinge along longitudinal portion of fracture.

Fig. 11 is a roentgenogram of a right-handed spiral fracture of the left femur caused by muscular action on the occasion of the receipt of a bullet in the external condyle of the femur, and Figure 12 is a roentgenogram of a left-handed spiral fracture of the right humerus resulting from throwing a baseball. The spiral went more than twice around the bone. The fracture in the latter case being a pure torsion fracture had no longitudinal displacement, but operative reposition was required because of the entrance of a mass of muscle between the fragments. In another case a burglar running through a sand lot was shot in the right leg. The foot being fixed in the sand inhibited internal rotation as the man jumped and a left-handed spiral fracture resulted.

The right femur may be broken in a right-handed spiral by a right-handed twist as is shown in Figure 13, the result of an experiment on the dead bone with periosteum intact. The periosteum is torn almost the whole length of the spiral but makes a hinge along the vertical part of the fracture, which in this case was on the side opposite the linea aspera.

In the upper extremity the projection forward of the flexed forearm, which is the lever producing most of the spiral fractures of the humerus, effectually prevents internal rotation to the point of fracture by striking the body except when the arm is raised far from the side.

Torsion fracture of the fibula is less common than of the tibia, for often in torsion fracture of the tibia the weight of the body being borne by the fibula off center produces a flexion fracture; still if pure torsion be continued after the tibia has broken, spiral fracture of the fibula will be produced. Spiral fracture of the fibula does not occur without fracture of the tibia except of the external malleolus, which is not infrequently broken in a right-handed spiral on the left leg and left-handed spiral on the right leg, the force being an external rotation of the foot.

I would close with a plea that in presenting the subject of fractures to a class of students the matter be looked on in the beginning from the point of view of mechanics. Experimental study should be given to the manner of breaking of plaster, clay, wood, old rubber, dead human bone and, since living bone breaks differently from dead bone, bone freshly removed from recently killed laboratory animals.

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ROENTGENOSCOPY OF THE LIVER AND BILIARY PASSAGES WITH SPECIAL REFERENCE TO GALL-STONES *

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It seems timely to emphasize the possibilities of soft tissue roentgenography in the recognition of diseases in the right upper quadrant of the abdomen. The purpose of this paper is to call attention to a number of facts concerning the biliary tract, and particularly the gall-bladder, obtainable with the aid of the Roentgen-ray. I wish to preface my remarks by insisting on the necessity of a careful history and a thorough physical and laboratory examination of the patient by the other older-established methods before a correct estimate can be placed on the roentgen findings.

The liver, being opaque to the Roentgen ray and surrounded by more or less transparent organs, permits a study of changes in its position, its size and its shape—often contributory evidence of considerable value. The outline of the upper border of the liver is easily determined. Roentgenographically speaking, the diaphragm is inseparable from the normal liver, their shadows being one, forming the so-called phrenohepatic shadow. The brightly illuminated pulmonary field presents a sharp contrast to the general gray dimness of the abdomen, permitting the upper border of the liver to be accurately studied. One may recognize even slight irregularities in its contour. In a number of cases, a nodular condition of the liver, later verified by operation or necropsy, was determined by a study of the phrenohepatic shadow.

Fig. 3.—Secondary carcinoma of the stomach. Six gall-stones present. Note the irregularity of the phrenohepatic shadow, contributing to the diagnosis of metastatic secondary carcinoma of the liver.

* Read in the Section on Surgery of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

* Owing to lack of space, this article is here abbreviated by omission of the details of technic, which appear in full in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on request.

The shadow of the inferior surface of the liver, however, is not so easily determined, being confused with the image of a number of organs—the right kidney, the duodenum and the great vessels, and probably also the colon. In order to emphasize the inferior border of the liver shadow, distention of the colon or stomach or both by means of gas may be practiced. The colon is frequently found already distended by gas collections or it may be artificially distended through the rectal injection of air. Inflation of the stomach may be secured by giving first a solution of 4 gm. of sodium bicarbonate in a quarter of a glass of water, followed immediately by a slightly smaller amount of tartaric acid in an equal quantity of water. Except in special studies, it is rarely necessary to practice this maneuver. In the majority of roentgenograms of the bismuth-filled stomach and colon, the inferior border of the liver, at least its lower two-thirds, is distinctly outlined.

Fig. 4.—Bismuth and gas filled the colon, emphasizing the shadow of the lower border of the liver. Colon adhesions in the gall-bladder region.

Fig. 5.—Lesser curvature of the stomach distorted by enlarged left lobe of the liver. On fluoroscopic examination peristaltic waves were distinctly seen, proving the tumor to be extraventricular.

Normally the diaphragm and the liver are inseparable. When the shadow of the diaphragm is separated from the liver by an area of clear or transparent tissue, the appearance is very suggestive of abscess. Occasionally a case may be encountered in which an abnormal position of the transverse colon gives rise to a change in the percussion note, which together with the roentgenographic appearances, may lead to the diagnosis of hepatic abscess. Further investigation may show an abnormally long mesocolon, permitting unusual mobility of the colon so that it rises above the superior surface of the liver. The possibility was first described by Chilaiditti, who reported several cases.

Roentgenographic study of the liver is especially valuable in the location of abscess on the posterior or superior surface of the liver. Only in the most extraordinary cases is the Roentgen ray likely to give information concerning abscess in the lower portion of the liver, the abscess extending downward instead of upward toward the lung.

Among the appearances suggesting subphrenic abscess are the following: 1. Diaphragm movements limited and painful, with resulting immobilization of the liver. The other portion of the diaphragm, usually the left, varies its position as usual, or is perhaps more free, in a compensatory manner. 2. The contour of the upper surface of the diaphragm projects unusually high into the clear zone of the lungs. 3. Pulmonary involvement may be seen, the result of infection or rupture. 4. If gas is present in the abscess, the level of the fluid will be discernible beneath the diaphragm, the surface of the fluid remaining horizontal regardless of the position of the patient.

In nodular carcinoma of the liver, relatively satisfactory results are obtained with the Roentgen ray. Roentgen study of the patient in an oblique, posterior position, may also determine the presence or absence of enlarged lymph-nodes of the mediastinum. Following the removal of a tumor of such a nature that the occurrence of metastases is feared, systematic roentgenoscopy may give accurate information as to the location of metastatic foci.

Occasionally a bismuth meal examination reveals a deformity of the lesser curvature of the stomach, when it is necessary to differentiate a lesser curvature tumor from pressure of the border of the enlarged liver. In such instances, determination of the presence or absence of peristaltic waves on the lesser curvature through fluoroscopy or serial roentgenography will permit the differentiation.

Fig. 6.—Lesser curvature of the stomach deformed by a carcinoma of the lesser curvature. Repeated plate and fluoroscopic examinations showed no peristaltic waves.

Fig. 7.—Hepatofixation of the stomach, the pylorus being drawn upward and to the right by adhesions due to gall-bladder disease. Two gall-stones present in this case.

ROENTGENOGRAPHIC EVIDENCES OF GALL-STONES AND CHOLECYSTITIS

It has been generally understood for a number of years that it was scarcely worth while to submit a patient to Roentgen examination for gall-stones. This belief was founded on the fact that the principal constituent of gall-stones is cholesterin and that many gall-stones consist almost entirely of pure cholesterin. The experience of Carl Beck of New York only served to confirm this

idea. Furthermore, the comparative infrequency with which gall-stones have been discovered in many thousand routine examinations of the urinary tract, as compared with the estimated frequency of gall-stones, according to necropsy statistics, has further served to discourage roentgenographic search for them.

Good authorities, such as Naunyn, have asserted that gall-stones are present in 10 per cent. of individuals. W. J. Mayo, in commenting on these statistics, calls attention to the fact that these high percentages have been obtained by post-mortem material from large hospitals, old ladies' homes, almshouses, etc., and that the illnesses or disabilities which brought these people to the hospitals were, in themselves, "sufficient to bring about gall-stones or to be caused by such disease." Mayo concludes that 0.5 per cent. would be a fair estimate of the frequency of gall-stones in persons of all ages; that 5 per cent. to 8 per cent. of women and 2 per cent. to 4 per cent. of men have gall-stones after the age of 50.

Fig. 8.—Four large gall-stones. Note the capsule-like shadow characteristic of certain gall-stones.

Fig. 9.—Thirteen gall-stones.

In my last thousand cases for examination of the gastro-intestinal tract following the bismuth meal, including a number of cases suspected of cholelithiasis, gall-stones have been identified, roentgenographically, in forty cases. In eight other cases, not examined with bismuth, roentgenograms of gall-stones have been obtained. The large number of gall-stone examinations in connection with the bismuth meal is accounted for by the fact that I do not recommend mere Roentgen examination of the gall-bladder region when searching for stones, but insist that the bismuth examination of the stomach, at least, and preferferably of the stomach and bowel, should be included as a part of the Roentgen examination of the gall-bladder.

As before remarked, in a thousand patients referrred for gastro-intestinal disorders, I have demonstrated gall-stones by means of roentgenoscopy in almost 5 per cent. I believe I am safe in the opinion that, when gall-stones are present, they may be demonstrated by this means in 40 or 50 per cent. of cases. A negative opinion as to the presence of gall-stones following the Roentgen examination, of course, does not rule them out, but they are demonstrated with such great frequency that it is distinctly worth while to search for them in every suspected case. This is certainly a larger percentage of gall-stones relatively impermeable to the Roentgen ray than would be expected from our previous conception of the visibility of gall-stones. Pfahler's experience in the roentgenographic search for gall-stones has been equally encouraging.

The increase in the number of cases in which gall-stones have been demonstrated by roentgenoscopy may be explained as follows:

1. Roentgenographic technic of to-day has made great advance, especially with reference to soft tissue detail. This is especially noticeable when intensifying screens are used, although in some instances, a clearer outline of gall-stones has been obtained on ordinary plates made without screen.

2. During a bismuth meal examination, the plate is usually anterior to the body and the tube behind, thus bringing the gall-stones nearer the plate on which their shadow is thrown and thereby increasing the probability of the shadow being recognized. On the other hand, during the usual examination for urinary stone, the plate is placed posteriorly, the tube being in front. In a number of instances it has been impossible to record a recognizable shadow of gall-stones on the plate made in a position for kidney examination, although on the plate placed anteriorly, the shadow was definitely seen.

3. One of the chief reasons for the more frequent discovery of gall-stones, roentgenographically, has been the fact that it has been considered distinctly worth while to look for them, and all plates of the hepatic region are most carefully scrutinized for any suspicious shadows.

4. Recent investigations have shown that it is rare to find stones composed of pure cholesterin on the one hand or of pure pigment salts on the other. The cholesterin stones "nearly always contain some pigment," most likely a calcium salt, and although nearly all gall-stones contain a good deal of cholesterin, calcium salts or bile pigments may be said to be almost invariably present. In the opinion of Dr. Williams,[1] calcium carbonate will be shown to be present much more frequently than has hitherto been thought. Dr. Williams concludes that "for a fuller understanding of the clinical aspect of gall-stones, the usually accepted classification of single cholesterin stones and multiple pigment stones needs considerable modification."

Fig. 10.—Six gall-stones.

Fig. 11.—Six gall-stones.

Suspicious shadows, when found, must be identified by various maneuvers to differentiate gall-stones from the various shadows with which they may be confused. Suspicious right upper quadrant shadows most likely to be confused with gall-stone shadows are those due to

1. Williams, O. T.: Quoted by Dr. Thurston Holland; Arch. Roentg. Ray, March, 1913.

(1) calcareous deposits in the costal cartilages; (2) renal calculi; (3) calcareous deposits in a tuberculous kidney; (4) calcified mesenteric lymph-nodes.

Calcareous deposits in the costal arch are easily identified in stereoscopic plates as they are also easily recognizable in plates made postero-anteriorly.

Kidney stones may be identified by their clean-cut edges, their immobility, the homogeneous nature of the shadow and the fact that the shadow of the stone shows within the shadow of the kidney, although several plates may be made in different directions. A comparison of the exact size of the shadows made on two plates, one made anteroposteriorly and one made postero-anteriorly, shows that the shadow of the gall-stone is usually more clean-cut and distinct and somewhat smaller in the latter than in the former.

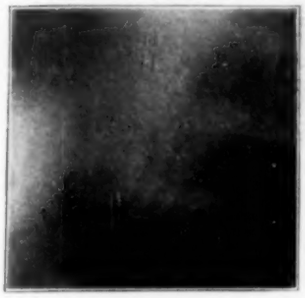

Fig. 12.—A single gall-stone.

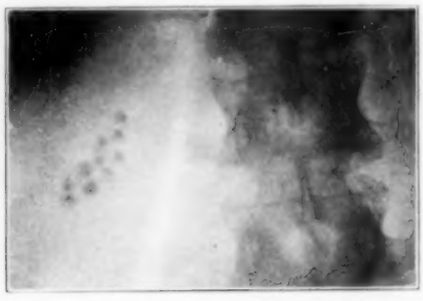

Fig. 13.—Ten gall-stones. This case illustrates the necessity of differentiating from renal calculi, for here the gall-stone shadows are superimposed on the well-defined shadow of the right kidney. Roentgenograms made obliquely or stereoscopically are needed.

Pyelography is likely to be of special use in differentiating renal shadows. The shadow of the renal pelvis and the suspected shadow may coincide and several plates at varying angles should be made or else stereoroentgenograms secured, showing that the suspected shadow really rests an inch or more anterior to the renal pelvis shadow. Stereoscopic plates of the renal and gall-bladder region may alone suffice to identify shadows either biliary or renal. E. W. Caldwell was probably the first to apply the stereoscopic method to the identification and differentiation of suspicious shadows in the region of the kidney.

Calcareous lymph-nodes are fairly common, but, as a rule, cast a very characteristic shadow, irregular, the edges being indistinctly outlined, with here and there areas of greater density, giving more or less of a mulberry appearance to the shadow. Calcareous lymph-nodes are frequently multiple and may be demonstrated to be perfectly freely movable by manipulation under the fluorescent screen, or by making plates with varying pressure applied in different ways on the abdomen.

Identification of hepatic or common duct stones by means of the Roentgen ray has been successfully accomplished by Beck and Pfahler, at least, and perhaps others. I have had one remarkable case of common duct stone successfully demonstrated roentgenographically (Fig. 14).

Many gall-bladder region shadows have characteristic markings which serve to identify them as gall-stones. In visible gall-stones, the calcareous deposits are arranged in strata, usually a calcareous deposit on the exterior, the center being less opaque. The stone thus may present a definite capsule-like circumference. Many gall-stones show facets; others are uniformly opaque. In stereoroentgenograms of the abdomen, the gall-bladder shadows are seen to lie in a plane considerably anterior to the position of the vertebrae and considerably anterior to the outline of the kidney itself. This conception may be further corrected and verified by stereoroentgenograms following the injection of collargol or a catheter into the pelvis of the kidney. It is also likely that stereoroentgenograms following the ingestion of a bismuth meal will show the relation of the suspected shadow to the pyloroduodenal shadow in a manner further serving to identify this shadow as gall-stone.

Under the fluorescent screen, one may often very satisfactorily study the relation of the suspicious shadow to a point of pain on pressure under the right costal arch. Of particular value is palpation following the bismuth meal, when one may find that there is definite localized pain on pressure at a point to the outer side of the duodenal shadow, moving up and down during respiration, whereas on accurate palpation on the gastric side of the duodenal bulb, no pain at all may be present.

Even if no suspicious shadows be present, a number of Roentgen-ray findings following a bismuth meal are of assistance in the diagnosis of gall-bladder disease, with or without stone, namely:

1. Hepatofixation of the stomach, the pyloric region being drawn to the right and upward in a significant manner. Pfahler called attention to this sign two years ago. These adhesions rarely produce delayed emptying of the stomach.

2. A definitely tender spot of pain on pressure accurately localized to the outer side of the shadow of the duodenum. If the duodenal shadow is not sufficiently dense, it may be rendered so by the simple expedient of having the patient lie on the right side for a few moments, and then asking him to turn on the back while holding a full breath. The screen having been in readiness, the current is started, and fluoroscopic study made at once while the pyloroduodenal region is well seen. Or with the palpating hand or a wooden spoon, some of the contents of the stomach can be forced out through the pylorus into the duodenum. It is a characteristic of such cases that there is a lag in the emptying of the duodenum.

Fig. 14.—More than seventy gall-stones. One in the common duct.

Fig. 15.—Twenty-seven gall-stones.

3. The presence of Riedel's lobe of the liver, when demonstrable following gas distention of the stomach and colon, is another contributory sign of gall-bladder disease. Particularly in cases of suspected gall-bladder

disease, in which jaundice is not present this sign may be of special value. In several instances I have seen a rounded, localized enlargement on the inferior border of the liver, which proved to be an enlarged gall-bladder.

4. The hepatic flexure of the colon may occupy an unusually high position, a further suggestion of gall-bladder disease.

5. The emptying time of the stomach following a bismuth test-meal is usually much shortened, and the outline of the duodenum is well seen owing to a delay in the emptying time of the duodenum or to a too rapid outpouring of the stomach contents through the duodenum. It was formerly supposed that this unusual visibility of the duodenum strongly suggested duodenal ulcer, but in my experience it may occur in any duodenal affection or in gall-bladder disease.

Fig. 16.—Multiple gall-stones.

Fig. 17.—Multiple gall-stones.

6. In a number of cases I have observed a spastic manifestation in the stomach, sometimes a spastic indrawing on the greater curvature high up near the cardia and at other times a complete spasm of the pylorus as an associated sign of gall-bladder disease. The same sign has also been seen in duodenal ulcer, tabes, hysteria, appendix disease and even in hyperthyroidism.

7. In a few cases, very abnormal disposition of the sigmoid flexure of the colon has led to a diagnosis of gall-bladder disease. The roentgenographic demonstration of aberrancies of the sigmoid colon has been discussed by Pfahler, myself, and various others. The sigmoid may be procolic or retrocolic. In one remarkable instance, the aberrant retrocecal loop measured 54 inches from the iliopelvic junction to the rectum and was adherent every inch of the way, including adhesions to the duodenum and the stone-filled gall-bladder.

ABSTRACT OF DISCUSSION

DR. LEWIS GREGORY COLE, New York: It is generally believed by the roentgenologist as well as by the profession at large that gall-stones do not show in the roentgenogram. The reason for this, I think, is largely, as Dr. Case stated, that we do not search for them as we should. I do not think that I could take exception to a single thing that Dr. Case said in his paper, except about the possibility of showing the sulci between the lobes of the liver. During the past six months I have found more gall-stones than kidney-stones, simply because I looked for them. They have to be differentiated. You cannot make a definite negative diagnosis, but you can make a definite positive diagnosis.

DR. GEORGE PFAHLER, Philadelphia: I believe that in 50 per cent. of these cases gall-stones can be demonstrated, and whether or not they throw a shadow depends on their composition. If they contain lime salts, they can be demonstrated. The kind Dr. Case showed were of that composition. In fact, gall-stones can practically all be demonstrated. Occasionally I can show a stone consisting almost entirely of pure cholesterin. A case of that kind was referred to me. The patient was passing blood in the urine and was extremely tender over the gall-bladder. In that case I found faint abnormal shadows near the common duct in two plates. I made a diagnosis of stone in the common duct and at the operation that diagnosis was confirmed. The stone was removed, and this shows that we can often go beyond the group to which Dr. Case referred. Such stones cannot be demonstrated by lantern-slides; but only by proper illumination and by one who is an expert in reading these negatives. They can also be demonstrated by a technic I described two years ago before the American Roentgen-Ray Society, namely, by bending the body strongly to the left. I wish to refer to a case in which such studies were most important to a patient suffering from severe pain in the right side for eight years. The appendix was removed, but the pains continued, and it was finally concluded that the pains were due simply to a desire to have morphin. A diagnosis of malingering was made. A careful study of the kidney showed no stone, but an examination of the gall-bladder region showed that the gall-bladder was filled with stones. Dr. Laplace removed 196 small, sharp-cornered stones. Every time one of these stones passed the patient had a severe colic. These are only a few examples of cases in which the practical application of this method will often keep us from making a faulty diagnosis.

DR. A. D. BEVAN, Chicago: I have followed this subject rather closely for a number of years. In 1898, when the early work was being done with the Roentgen ray to determine the position of kidney-stones, we did some experimental work to find what evidence we could obtain in cases of gall-stone disease. Our results were interesting. We took a series of stones, no matter of what composition, and put them in a large beef liver. Then we made a roentgenogram to find what stones gave a shadow and what stones did not. As has been very well stated here this afternoon, the presence or absence of a shadow depends entirely on the composition of the stone. We found that the pure cholesterin stones did not show any shadow at all. The stones that contained carbonated calcium gave a good shadow. Some stones did not cast as much shadow as normal salt solution. In looking over this evidence we must ask ourselves as practical surgeons of how much value this work is. I think it is of comparatively little value. The time has not arrived when the Roentgen ray is of any great value in making a diagnosis of gall-stone disease. The men who are doing a great deal of roentgenographic work encounter many cases in which they find this evidence. They are not surgeons, and therefore they come to the conclusion that this would be of value in a given number of cases. To the surgeon, on the other hand, who is operating on hundreds of cases of gall-stone disease, this means of diagnosis would not be of much value. I do not believe that it would be a help in more than one case in ten. I want to emphasize that point. In one case, for instance, the evidence was very confusing. The

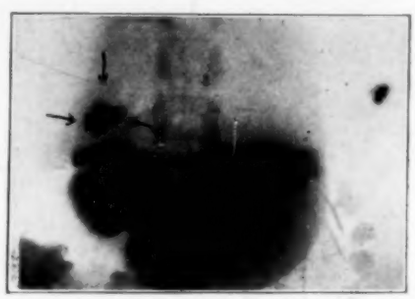

Fig. 18.—Multiple gall-stones.

clinical history was that of a typical common-duct case. The roentgenogram showed a definite stone in the position of the common duct. The operation showed that the stone was there. It was removed from the common duct. The conclusion was definite and absolute. You would hang a man on evidence of that kind. I placed that stone in some urine and found that it floated. It was a light stone. I took another picture of that patient and found the same shadow in the same place. It was a silent kidney-stone. I wish to emphasize the fact that the evidence given by the roentgenogram in determining the presence or absence of gall-stones is of very little value.

DR. J. T. CASE, Battle Creek, Mich.: In the part of the paper which I did not read I described Dr. Pfahler's technic to assist in the demonstration of gall-stones. Dr. Bevan's remarks are timely and should serve to repress youthful enthusiasm, but I should like to call your attention to a few facts. Among the last one thousand cases of bismuth-meal examinations made in my clinic for conditions such as gall-bladder disease, ulcer and carcinoma of the stomach, intestinal trouble, appendicitis and all kinds of abdominal conditions, I have demonstrated gall-stones in forty-eight. If only one-tenth of these cases can be diagnosed by the Roentgen ray, there were 480 cases of gall-stones among one thousand cases, and yet none of these cases were suspected clinically. I believe that the percentage—one in ten—is too high.

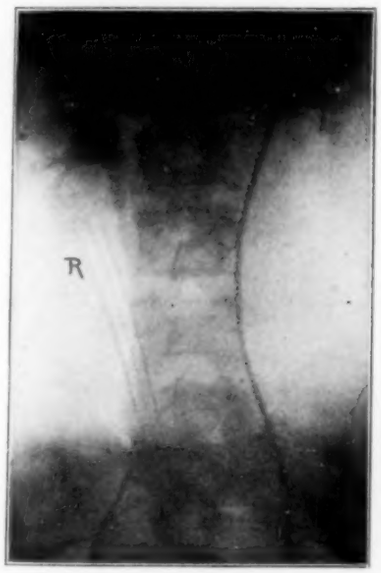

Fig. 1.—Series of normal kidneys. J. E., male, Case 2. Catheter on left side follows roof of pelvis as in 80 per cent. of our cases. Note shadow of both kidneys.

Fig. 2. — Series of normal kidneys. Miss L. P., Case 9. Bifid pelves with sharp kinks in each ureter. Note the presence of the collargol in the collecting tubules.

Fig. 3.—Series of normal kidneys. Mrs. B. F., Case 10. Note bell shape of right pelvis and sharp kink in right ureter shortly below ureteropelvic junction. Note also wide ribbon-like appearance of ureters.

ROENTGENOGRAPHIC STUDY OF THE NORMAL KIDNEY, ITS PELVIS AND URETER*

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AND
WILLIAM M. SPITZER, M.D.
DENVER

From our text-books on anatomy and from the dissecting-room we have learned the normal size, shape and position of the kidneys, and their pelves and ureters in the cadaver. When we try from roentgenograms to draw correct conclusions as to the size, position and contents of the pelves, calyces and ureters, or the difference in position of the kidneys and ureters in the prone and upright positions, we find such a diversity of opinion concerning the normal or abnormal conditions existing that we think it worth while to undertake the roentgenographic study of the normal kidney, its pelvis and ureter in the living subject. We hope thereby to fix a reliable standard for ourselves, so that deductions and diagnoses from our cases in this most important field may be found reliable and accurate, whether confirmed at operation or by the subsequent course of the case.

The normality of our cases was determined as follows: The history was carefully taken, and if anything was found to indicate previous or present kidney or ureteral lesions, the case was dropped. The clinical history being negative, the bladder urine was drawn and examined. If normal, the case was accepted for roentgenographic study. If abnormal, and we suspected that the condition was due to some abnormality in the lower urinary tract, the ureters were catheterized; if it was found that all the trouble existed below the lower ureteral orifices, the case was accepted and roentgenographic study of the kidneys and ureters undertaken. If any abnormal conditions were detected through this study, the case was thrown out of the series. Thus we did a great deal of work, and have but ten cases to report, with, of course, twenty normal kidneys. Previously we had formed certain ideas from the plates of a presumably normal kidney taken to show some pathologic condition of the opposite kidney. We have not included a study of these normal kidneys in this series because these cases could not meet the requirements demanded by us as to history, clinical findings, clean urine, etc.

The technic followed is here described: Roentgenographic catheters are passed into the ureters as far as possible. When they come to a stop in the kidney pelvis, collargol is injected by measured gravity pressure. We have used for this purpose an apparatus consisting of two 50 c.c. burets, ⅜ inch inside diameter, for the collargol, which is connected by rubber tubing of smaller diameter with a needle small enough to enter any size urethral

* Read in the Section on Genito-Urinary Diseases of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

catheter. This idea was adopted from Braasch's apparatus. We have added thereto an irrigating jar on the same stand for the purpose of supplying water for our cystoscopic examination. This apparatus is so raised that the bottoms of the burets are less than 2 feet above the level of the patient's body. We believe that this furnishes us with a comparatively slow flow of collargol into the kidney pelvis without much pressure. We do not cease injecting collargol into the pelvis until pain is positive on both sides, as we have found that the subsequent readings and interpretations of our plates are unsatisfactory if the pelves are not filled, and there is no way of determining this fact until pain is complained of. One of our cases, in which we stopped the flow of collargol before the appearance of pain, demonstrates that an interpretation of the plate is unsatisfactory when distention of the pelves has not been obtained.

On the appearance of pain, however, the flow of collargol is immediately stopped. From this point we have varied our technic, depending on whether we wanted to show the ureters, their shapes and angulations, or whether we desired to show where catheters go in normal pelves, either by partially withdrawing our catheters or by leaving them *in situ*. We have never, following this plan, used less than 4.5 or more than 15 c.c. in a pelvis. The percentages of collargol that we used varied from 8 to 20 c.c., depending on the stoutness of the patient, and we have found no more disturbance or pain with the high percentage than with the low, and have decided that pain, shock and subsequent temperature are caused chiefly by distention.

The fact that injection should cease immediately on the appearance of pain is demonstrated by Case 9 in the accompanying table, in which, although we used no more pressure than for the others, we permitted the flow of collargol for a short time after the patient complained of pain, and the tubules on the plate resembled the branches of a delicate fern. This patient suffered with some pain, and had a temperature, varying from 99 to 101 for two weeks afterward, and the collargol was not completely swept out for about this length of time.

In the literature on this subject the report of a case appeared in which the collargol ruptured the parenchyma of the kidney, and appeared under the true capsule. One would infer either that there was undue pressure from a hand-syringe (whose pressure cannot be gauged) or an unduly long-continued flow under pressure. We wish to remark in passing that this work should be done only by men who are trained in it.

The stereoscopic plates are made with intensifying screens, the anode of the tube at least 26 inches from the plate. The tube is focused about the level of the third lumbar vertebra. Care has been exercised in our work to take all plates at the same point of respiration, that is, the breath held at the end of a deep inspiration. This is true of the plates taken in the recumbent and the standing postures. By this means we have been able to determine the mobility of the kidney over and above that produced by respiration. We have not tried to ascertain the amount of movement of the kidneys in respiration, and on the other hand, we have eliminated this feature from our series by the precautions just mentioned. A slight respiratory movement, while the plate is being taken, gives a hazy or double outline of the collargol-filled pelvis and ureter, and hence it is necessary that respiration cease entirely for the extremely short time required to take the plate.

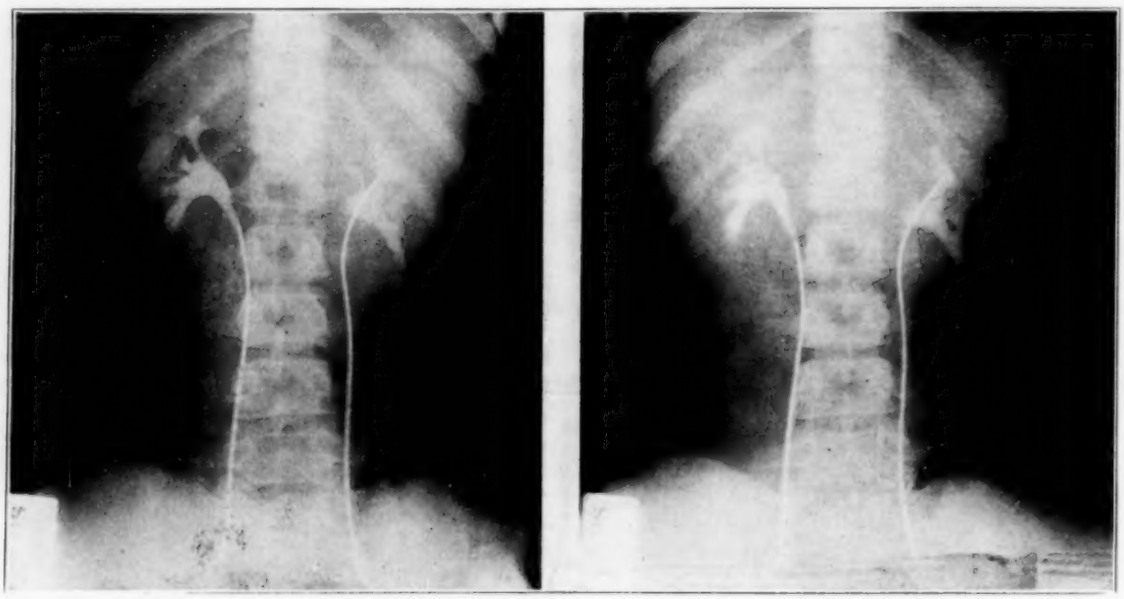


Fig. 4.—Series of normal kidneys. Miss R. B., Case 7. This may be cut out, pasted on a piece of cardboard, and the stereoscopic effect obtained with an ordinary parlor stereoscope.

The apparatus used was the Scheidel-Western transformer, first inductance tube drawing 35 to 40 milliamperes, exposure from three-fourths of a second to one and one-half seconds, depending on the weight of the patient.

We had found in our previous work that without stereoscopic plates we were unable to differentiate between kinks and curves of the ureters, and the course of the ureter was a matter of guess-work. We also found it difficult to know the relative position of calyces and of shadows connected with the kidney pelvis. With stereoscopic plates the relative position of the structures is apparent, and this is important.

We have found that generally we can show the kidney itself in the roentgenogram. It is obscured, of course,

on occasions, by gas, but when this is not so it shows distinctly. We believe that it is of value to have the kidney itself appear on the plate because one can exclude a growth in or near this organ, judging from its size, shape and position, if it be clearly shown. We have failed to detect anything new in our study of the size and shape of the kidney. In the table it will be seen that the position of the normal kidney varies markedly. Some of these kidneys are to be found very high, and some very low. One of the kidneys in Case 3, although normal, is no doubt dystopic. The mobility, varying from nothing to 3.5 cm., as shown in the table, is determined by comparison between plates taken in the recumbent and the standing positions. After the patient was removed from the table and placed in a standing position he was asked to cough and make other forced respiratory efforts, and to raise his heels from the ground and come down forcibly. The change in position also intensified angulations of the ureters. Attention is called to the fact that in one case the kidney is actually in a slightly higher position when the patient is standing than when lying down, owing possibly to a change of focal point.

In our series we find that the capacity of the normal pelvis varies, as before stated, from 4.5 to 15 c.c., and we also find that the apparent size on the plate occasionally seems incompatible with the real capacity. When there is a single pelvis it seems to be always of the same shape, that is, convex on its upper border, concave on its lower, and points toward the spinal column, its axis being either horizontal or slanting slightly downward and forward to the ureteropelvic junction. The course of the ureter is never constant and the shape seems to be dependent on peristalsis to a great degree. Its extreme mobility and its loose connection with neighboring tissues are easily shown in the stereoscopic plates by the position it is forced into by the catheter, when the catheter is carried to the end of a calyx and meets with slight resistance.

Its length has been estimated as follows: At the time of examination, the distance that the roentgenographic catheter passes into the ureter is noted, and on the plate the distance from the ureteropelvic junction to the terminal end of the catheter is computed and subtracted from the total number of centimeters that the catheter passed out of sight into the ureter, thereby giving the approximately true length of the ureter. The distance the catheter disappeared into the ureter, heretofore, has been considered the ureteral length. It must be apparent, from our plates, however, that this is inexact, as variable amounts of catheter may be contained in the pelvis itself. The ureteral length is of importance, as by this means a dystopic kidney may be proved, in conjunction with roentgenographic work. If the ureteral catheter disappeared but 15 or 20 cm. into the ureter and was then brought to a halt, this would be of no value without the accompanying plates to demonstrate that the catheter was not brought to a halt somewhere in the course of the ureter by a stricture or bend, instead of being in the pelvis. For many other reasons it is well to know the ureteral length. This is but one of the many places in which it is shown that the urologist must always work with the roentgenologist to draw conclusions in these cases. We are convinced and feel with the rest of the urologic world that diagnoses are difficult enough to make under proper conditions, even with all the aid at our command, and are satisfied that as the worker employs more and more means and methods to draw his conclusions, his deductions, in proportion, will be more exact.

We have encountered but two main types of pelves, the single and the double pelvis as described by others. In Case 9 there are double pelves on both sides, in all the rest of the cases in this series there being single pelves. We find, if it be of any importance—although we cannot conceive why it should be—that the number of calices majores shown on the plates varies from three to six. Another observation, and one which we think is of value, is that the catheter, as a rule, in the normal kidney follows the superior or convex wall of the pelvis. This is due to the fact that the catheter has a tendency to travel in a straight line, is deflected by this wall and continues in contact with it until it enters a calyx. For the same reason, but not so frequently, the catheter travels into the superior oblique calyx, if we might so name it; or if there be no superior oblique calyx, it travels into the superior calyx. If the kidney pelvis were large and the calyces wide, no doubt the catheter would take a different direction and coil up in the pelvis or pass to a lower calyx, as we have occasionally seen.

Anatomists have described the kidney pelvis as a dilated portion of the ureter and have also described other dilatations and constrictions below the pelvis. They also inform us that the angulations exist in the ureter, normally, and tell us that the ureter is further constricted by structures outside of it, such as the spermatic artery, which crosses the ureter about the middle of its course; but we do not know, from observations made by others, how these normal kinks, constrictions and dilatations should appear in roentgenograms, and because of frequent peristalsis in the ureter we are not prepared to say whether all these constrictions actually exist or are caused by peristalsis; but we have repeatedly demonstrated that kinks, angulations and constrictions are common in normal cases. We believe that we have overcome the peristalsis of the kidney pelvis, a muscular structure, by maintaining the pressure of collargol while the plate is being taken. We accomplished this by having the end of the catheter still connected with the needle and tube which furnished the collargol, although the flow was shut off with a stop-cock. While no more collargol could flow in, in the majority of our cases none flowed out, as verified by cystoscopy. In measuring the capacity of the kidney pelvis, one must take into consideration that frequently quite a quantity of collargol flows into the ureter without appearing in the bladder, as in Case 10, and that this is generally estimated in the pelvic contents. We have found this filling of the ureters occurs most frequently in women who have borne children, and whose ureters appears to be large and lax. This condition can only be determined on the inspection of the roentgenogram.

Lastly, we come to the question of whether or not pyelography is justifiable, in view of its alleged seriousness. We are decidedly of the opinion that it is, because differential diagnosis between abdominal conditions and kidney and ureteral conditions have been made possible by this means, whereas heretofore medicine and surgery were held back because of the inability of the surgeon to differentiate between abdominal and pelvic conditions on the one hand, and kidney and ureteral conditions on the other. Despite the fact that we have had pain, shock or high temperature, or any combination of these, follow our investigations, all in moderation and all transitory, we feel sure that we have done no permanent injury either in this series or in any of our pathologic cases.

We would suggest that immediately following the work a hypodermic of morphin and a large quantity of water with some whisky be given the patients, the first of which

will completely control the pain, and the latter produce a polyuria for the purpose of washing out the collargol which remains in the pelvis. We see no use in attempting to syphon the collargol from the kidney pelvis by leaving the catheter *in situ*, as we feel sure that the sooner the catheters are withdrawn the sooner will there be room for the fluid to leave the pelvis.

CONCLUSIONS

1. Pyelography is not only justifiable, but is necessary; however none but the trained urologist should attempt it.

2. Unless the lower border of the pelvis is concave, we consider it abnormal.

3. A pelvic content of over 15 c.c. should be viewed with suspicion and investigated further before its normality is accepted.

4. Movement of the kidney of from 1 to 3.5 cm. over and above the physiologic (respiratory) movement is normal.

5. The ureteral catheter, as a rule, enters the upper oblique calix and follows the roof of the kidney pelvis to do so, in a normal case.

6. Angulations, curves and kinks of the ureter are found in normal persons.

7. Stereoscopic plates are not only necessary, but imperative, to demonstrate intrapelvic and extrapelvic conditions, and the course and kinks of the ureter.

8. Length of ureter can be calculated only from the plate, and is of importance.

9. Pain, shock and subsequent temperature are caused by rapid distention of the kidney pelvis rather than by any particular drug or percentage of drug that is used, and are unavoidable, if one properly fills the pelvis for diagnosis, although none of these disagreeable sequelae need be produced to an extreme degree or cause much disturbance, and can be obviated to a great degree.

10. As the shape of the ureter is due to its laxity or tenseness, either of which conditions may be normal, and its caliber varies considerably in normal subjects, and as it is still further altered by peristalsis, care should be exercised in drawing conclusions that pathologic conditions exist because of apparent abnormalities of shape and course, or because of curves, kinks and angulations, or apparent constrictions.

Metropolitan Building.

ROENTGENOGRAPHIC STUDY OF THE NORMAL KIDNEY

Right Kidney

Case	Position Mid. Pelvis, Recumbent	Position Mid. Pelvis Standing	Total Movement. Respiry. Movement Excluded. Cm.	Shape and Type of Pelvis	Length of Ureter, Cm.	Capacity of Pelvis, c.c.	Number of Calices Majores	Kinks and Angulations of Ureters	Position of Catheter in Pelvis
1. J. D. M., M...	Upper border of third lumbar	Transverse process third lumbar	1	Single, nearly quadrilateral	34	6.5	5	None	Upper oblique calix
2. J. E., M.....	Transverse process second lumbar	Upper part of body of second lumbar	1	Single, pear-shaped	?	7.5	4	12.5 cm. from bladder	Not examined for
3. C. T., M.....	Opposite transverse process fourth lumbar	Between bodies of third and fourth lumbar	—1.5	Single, nearly pear-shaped. Almost quadrilateral	32	11	3	None	In upper calix
4. C. G., M.....	Lower part of body of second lumbar	Opposite lower part of body of second lumbar	0	Single. Pear-shaped	33	4.5	4	None	Upper oblique calix, passing along roof of pelvis
5 E. N., M.....	Interspace between second and third lumbar	Interspace between second and third lumbar	0	Single. Pear-shaped	30	7.5	4	Angulation in lower portion	Follows roof to lowest calix
6. M. W., F.....	Upper half of body of third lumbar	Interspace between third and fourth lumbar	2.5	Single. Pear-shaped	30	8	3	None	Upper calix, followed roof of pelvis
7. R. B., F.....	Opposite interspace between first and second lumbar	Opposite upper part of the body of second lumbar	1	Single. Pear-shaped	29	6	3	None	Upper oblique calix
8. E. T., F.....	Opposite upper border of third lumbar	At the level of transverse process of third lumbar	2	?	?	*	?	Slight angulations	Not inserted into pelvis
9. L. P., F.....	Opposite transverse process second lumbar	Opposite transverse process second lumbar	0	Double	?	5.5	..	Double kink below ureteropelvic junction	Not examined for
10 B. F., F.....	Opposite upper half body of second lumbar	Lower border of third lumbar	3.5	Single. Bell-shaped	?	†	2	1 cm. below ureteropelvic junction. Sharp and double	Not examined for

* Measured quantity injected, 7 c.c.
† Perhaps 12 to 14; had to be estimated.

ABSTRACT OF DISCUSSION

DR. O. S. FOWLER, Denver: I have found that it is not necessary to produce pain in order to get a satisfactory roentgenogram. Furthermore, I think it extremely inadvisable to inject enough to produce pain, for the reason that one may inject the kidney tubules, or go even farther than that. A few cases have been reported in which the kidney substance was ruptured with the production of an infarct. Therefore, I feel that it is extremely undesirable to produce pain, and I try to obviate it as far as possible. I consider it unimportant to determine the length of the ureter; in fact, you cannot determine the length by the insertion of the catheter. The catheter may meet an obstruction at 20 or 30 cm. or even farther, if you pass it up into a hydronephrotic pelvis. You cannot determine anything of value, therefore, by the distance you have inserted the catheter. If you meet an obstruction you had better stop there.

We would naturally expect the catheter to follow the upper surface, because that is the concave surface, and we would naturally expect it to follow the upper wall and to go into the upper calices. If you get it into the upper calyx and then keep pushing it in, it ought to curl up in the kidney pelvis.

The ureteral catheter smooths out all the angulations of the ureter when the patient is lying down. We do not have much trouble with the kidneys in patients when lying down. We want to see what these kidneys look like under normal conditions—fluid conditions—of the urinary tract. That is what the patient has to deal with every day of his life, and what is the object of putting in the catheter and trying to show something when the patient has the catheter in there! What we want to know is, is there any difficulty there under fluid conditions of the urinary tract? There may be anatomic deviations from a straight ureter. They may appear roentgenographically as though there were a kink. There are degrees of angulation and curving in these cases, and unless an angulation or curve is giving trouble, I say let it alone. It might give trouble in the future. I consider a kidney normal that is not producing symptoms, or if an obstruction cannot be demonstrated to which those symptoms can be referred. If you can demonstrate some other lesion to which these symptoms can be referred and cannot demonstrate something in the pelvis or ureter, then you should exclude the ureter.

DR. W. F. BRAASCH, Rochester, Minn.: I do not think that it is necessary to cause any pain in order to make a good pyelogram. The pelvis is best injected by the gravity method, that is, by raising the silver solution above the level of the patient. Pain is not necessarily caused in that way, even though the pelvis is completely filled. Pyelography has been

ROENTGENOGRAPHIC STUDY OF THE NORMAL KIDNEY (Continued)

Left Kidney

Position Mid. Pelvis Recumbent	Position Mid. Pelvis Standing	Total Movement. Respiry Movement Excluded. Cm.	Shape and Type of Pelvis	Length of Ureter, Cm.	Capacity of Pelvis, c.c.	Number of Calices Majores	Kinks and Angulations of Ureters	Position of Catheter in Pelvis	Remarks
Upper part of body of second lumbar	Transverse process second lumbar	1	Single, nearly pear-shaped	36	7	6	Catheter arrested below ureteropelvic junction. Intensified in standing plate	To kink 1 cm. below ureteropelvic junction	Right ureter markedly bowed forward by catheter pushing into calix. Air in bladder showing in standing plate. Left ureter dilated and constricted.
Transverse process first lumbar	Upper part of body of second lumbar	2.5	Single, pear-shaped	35	7	5	None	Upper oblique calix, following roof of pelvis	Obstruction met to right catheter at 12.5 cm. Impossible to pass this catheter further. Plate shows kink at this spot.
Opposite transverse process second lumbar	Opposite upper part of body of second lumbar	1	Single, pear-shaped	17	11.5	4	None	Upper calix, but follows floor to outer margin of pelvis	Dystopic kidney on right. Place where ureter enters dystopic kidney is on top of pelvis.
Lower part of body of second lumbar	Opposite lower part of body of second lumbar	0	Single, pear-shaped	35	8	3	Below ureteropelvic junction	Upper oblique calix, passing along roof of pelvis	Ureters demonstrate well their mobility in recumbent position, and are wavy and loose, and angulated in standing, although kidneys are high and immobile.
Lower part of body of second lumbar	Lower part of body of second lumbar	0	Single, pear-shaped	32	8.5	4	Angulation in lower portion	Follows roof to superior oblique calix	Ureters unusually straight and not loose.
Lower half of body of second lumbar	Interspace between third and fourth lumbar	3	Single, pear-shaped	31.5	7.5	3	None	Into upper calix. Has followed floor instead of roof of pelvis	Ureters not very loose.
Opposite body first lumbar	Interspace between first and second lumbar	1	Single, pear-shaped	28	5.5	4	None	?	Right pelvis is horizontal to vertical plane of body.
Opposite upper part of body of second lumbar	At the level of transverse process of second lumbar	2	?	?	‡	?	Marked angulations with pinching out of collargol in two spots	Not inserted into pelvis	Imperfect technic. Roentgenographic examination avails nothing. Note shape of ureter.
Opposite transverse process second lumbar	Opposite transverse process second lumbar	0	Double	?	6	..	Double kink below ureteropelvic junction. Sharpest kind of angulations	Not examined for	Obstruction met, but passed at site of kink on each side. Collargol pinches at both kinks in left. Constrictions and dilatations of left ureter.
Transverse process first lumbar	Transverse process second lumbar	3.5	Single, quadrilateral	?	§	3	None	Not examined for	Kink accentuated in standing plate. Upper calix of left kidney has emptied in standing plate, and its position is indicated by shadow resembling gas. Same occurs in one other plate.

‡ Measured quantity injected, 7 c.c.
§ Perhaps 12; not accurate; had to be estimated.

severely criticized for being the cause of severe pain, most of which could have been obviated if the proper technic had been employed.

DR. W. M. SPITZER, Denver, Colo.: I have used in these cases, as in all our pathologic cases, the gravity method. When I spoke of causing pain, I did not mean excessive pain or pain which lasts a long time; but we do cause pain, and we do not stop until we get to the point of pain. We use an apparatus such as Dr. Braasch uses, a 50 c.c. buret, raised two feet above the level of the patient. You will cause pain if you use a needle of fair-sized caliber and a good-sized catheter, whereas you will not cause pain with a small-sized needle, the difference being not so much in the amount of the solution used, as in the rapidity with which it is injected. When you have distention of the pelvis, whether it is caused by a stone blocking the ureter and thus damming back the urine, or by a fluid injected, you are going to cause some pain, and you cannot avoid it.

In answer to the remarks made by Dr. Fowler: I was not discussing the pathologic kidney. I was simply showing the normal kidney. We took great pains to assure ourselves that these kidneys were as normal as we can prove them to be at the present time. If the urine showed that the least thing was wrong with it, we threw the case out of our series. We took great pains in other ways to prove our cases normal. I do not think an exhibition of pathologic kidneys shows whether my cases were normal or not or concerns this work in any way. The object of the work was to attempt to show the normal. If other people will help to demonstrate the normal, we shall have, after a while, a basis from which to deduce the pathology. Simply to say, "Here is a case that is pathologic because I say so," seems to me foolish, and that is the reason that we have done this work. We have demonstrated kinks in 60 per cent. of the cases in which we sought them in this normal series.

To read something from a plate, I think we must have a kidney pelvis well dilated with collargol. I removed a kidney for a very evident tuberculosis. It had to be torn loose from everything around it. The case was diagnosed as a hydronephrosis and the patient was operated on because there was a kink in the ureter, which demonstrates that some of us cannot read the pathology shown in our pyelographs and justifies the study of the normal, as a basis for our deductions as to what is, and what is not, pathologic.

THE EXTERNAL BONE CLAMP VERSUS THE INTERNAL BONE PLATE IN THE OPERATIVE TREATMENT OF FRACTURES *

LEONARD FREEMAN, M.D.
DENVER

So much has been said recently about Lane's internal bone plates that there is danger of losing sight of the advantages of the external bone clamp. Hence a brief comparison of the two should be of interest.

In operating on fractures it is often necessary to employ some artificial means for holding the fragments in position. According to circumstances this may be done with chromic catgut, wire, bone or ivory ferrules or medullary plugs, autogenous or foreign bone grafts, staples, internal bone plates, or external clamps of various patterns.

The ideal method would consist in the use of something which, while holding the bones firmly and not irritating the tissues, would rapidly undergo absorption, thus leaving no foreign body to cause delayed union and late infection. It should also be easy of application, with the least traumatism, and should not interfere with the process of repair.

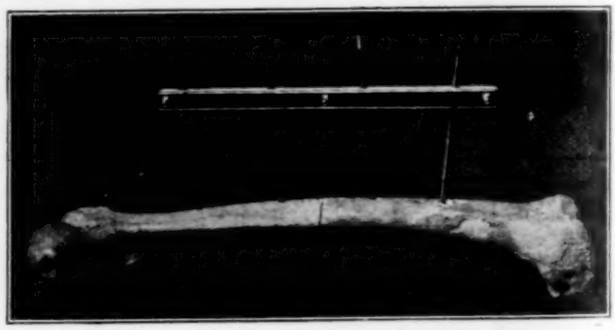
Unfortunately none of the procedures in use fulfil all of these requirements, although most of them answer sufficiently well in appropriate cases. At present the plate and the clamp are most in favor, although, in ununited fractures at least, the autogenous bone graft is rapidly gaining ground and may soon supplant both of them.

Great similarity exists between the internal plate and the external clamp. Both are fastened to the bone with the same number of screws, the only difference being that in one the part which unites them is outside the skin, while in the other it is beneath it. In fact, the clamp might be termed an external plate or the plate an internal clamp.

All external clamps have in common several screws, long enough to project well beyond the skin when they are inserted into the bone. The many varieties differ only in the mechanism by which the screws are held together.[1]

The advantages of the external clamp over the internal plate, in appropriate cases, are:

1. It can often be more easily applied, with less manipulation of the tissues and denudation of the bone. Holes can be drilled and the screws inserted with the



External bone clamp.

fragments in almost any position. They can then be adjusted without the use of elaborate holding-apparatus and the screws instantly clamped (see illustration).

2. Nothing comes in contact with the line of fracture, as does an internal plate; and the screws themselves may be placed as far away from the break as may seem desirable—even in sound, uninjured tissues. This is of much importance, because, as is well known, the presence of a foreign body favors delayed or non-union, to say nothing of infection. In this connection Martin[2] says, "As a rule, the presence of a plate, instead of stimulating osteogenesis between the broken bone-ends, retards it." The possibility of placing the screws at a distance from the fracture is also of manifest advantage in cases in which the bone is comminuted.

3. In most instances an external clamp will immobilize the bone fragments even more firmly than an internal plate will, as may easily be demonstrated. This is because the long screws get a particularly firm grasp within the bone and the heavy external clamp holds them together with absolute security. The screws, if rigid enough, may be long without detriment, because they will be removed later; and the clamp may be heavy because it lies without the tissues. When a clamp is

* Read in the Section on Surgery of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

1. The external bone-clamp was introduced into this country and popularized by Clayton Parkhill of Denver.
2. Martin: Surg., Gynec. and Obst., September, 1912.

properly inserted, say in a fracture of the tibia or of the femur, the limb may be picked up by the foot and thrown about in any direction without fear of disturbing the fracture; but if a plate is employed this can seldom be done without danger of bending or breaking it, or of pulling the screws from the bone.

4. The principal advantage of the external clamp, however, is that it may easily be removed at any time without the use of a general or even a local anesthetic, thus avoiding a much-dreaded secondary operation and also the necessity of leaving a foreign body in the tissues with all the disagreeable possibilities that this implies.

Every one knows that while plates are being inserted all over the country, they are constantly being taken out, either by those who put them in or by others. If this were all it would not be so bad; but, in addition, sepsis is not infrequent, sometimes resulting in loss of limb, as I have seen, or even in loss of life. In our Denver hospitals, which, I venture to say, compare favorably with most others, many plates have been inserted, the majority of which have had to be removed for various reasons, and some of the results have been disastrous in the extreme.

Let us now consider some of the disadvantages urged against the use of the external clamp:

1. Its size and weight. This objection is easily disposed of. The large and heavy portion, which insures security and strength, lies outside, where it is productive of neither inconvenience nor danger of any kind—a large instrument being tolerated by the patient as easily as a small one. The screws alone penetrate the tissues, and they are often of no greater diameter than those of an internal plate.

2. The most plausible objection to the external clamp is the supposed great danger of primary or secondary infection. This has been frequently and strongly urged, but, I am convinced, without adequate reason. The situation may be put in a few words: If the operation is a clean one primary infection will not occur with clamp or plate. If the operation is not clean, infection may take place with either; but its effects will be less severe with the clamp, because of drainage afforded by the external screw-holes. And on the side of the clamp lies also the great advantage that it may easily be removed at any time without a second operation.

If secondary infection occurs with the external clamp, it is late in appearing, trivial in amount and confined strictly to the screw holes, as has been amply proved by the experiences of Parkhill, Lambotte, myself and many others. In fact such localized, non-spreading, secondary infection may be compared to that which is seen around sutures of silkworm-gut, although infection is more likely to take place in connection with sutures than with screws, on account of constriction of the tissues by the former.

Infection does not easily spread with either screws or sutures because a granulating channel is soon formed which affords a protecting wall against bacterial invasion. In order to elucidate this point more clearly some experiments were conducted on dogs by my associate, Dr. O. S. Fowler. By inserting screws through the soft parts into the bones he was able to demonstrate that the holes become lined with granulations in the course of three or four days (the specimens were examined by Dr. Philip Hilkowitz) and it is not unlikely that a certain degree of protection begins even earlier. Secondary infection, however, really does not occur until much later than this, if proper precautions have been taken, thus giving ample time for the walling-off process to become complete. On occasion I have left clamps in place for from two to four weeks without manifest infection, and others have had similar experiences. During this period considerable protection is undoubtedly afforded by loose dressings, which favor rapid drying of the secretions, and by the occasional application of alcohol or of weak tincture of iodin to the vicinity of the screw-holes.

3. It is said that external clamps are difficult to use in certain cases. This is undoubtedly true, especially near the ends of the long bones, where the terminal fragment is too small or the cancellous tissue too soft for the screws to obtain a sufficient hold.

The whole question may, I think, be fairly epitomized as follows:

Both the plate and the clamp have their legitimate uses. In the hands of surgeons especially skilled and experienced in work of this kind, like Mr. Lane, for instance, plates may be more or less successfully employed at will. With the great majority of surgeons, however, the external clamp, when practicable, should be the instrument of choice, although there will always be those who will prefer the plate, in order to demonstrate their ability to use it.

The external clamp is especially indicated in connection with the shafts of the long bones, when the fracture is not too near the epiphysis or too deeply situated, as in the thighs of extremely fleshy or muscular individuals.

It almost goes without saying that clamps should always be employed in preference to plates in compound fractures where there is danger of infection resulting from the injury. It being a foregone conclusion that whatever is put in will have to come out again, it seems purposeless to use something which cannot be removed without a special operation and which adds to the danger of sepsis by its proximity to the line of fracture and by its size.

Metropolitan Building.

ABSTRACT OF DISCUSSION

DR. JOHN B. MURPHY, Chicago: The subject of treatment of fractures is, at this particular time, paramount in our surgical clinics. The proposition of doing an open operation for a fracture is much more serious than is the proposition of opening the abdomen, because you are dealing with tissues which while not so dangerous to life if infection does occur are enormously more easily infected. If a man can do an open operation for fracture and obtain aseptic healing, with regularity, he is doing the ideal thing. The control of the possibility of infection, however, is not always in his hands. There are many conditions that contribute to the occurrence of infection in the reduction of the fracture and its permanent fixation, and I am pleased to know that the doctor is endeavoring to get an accurate and perfect apposition by means of a device that does not expose the line of internal laceration and the fracture to infection. The Lane plate is the ideal means, to my mind, of holding together mechanically the fragments of the bone, provided it is placed by a man who is a master of the technic and who always attains perfect asepsis. There is still another element, however, in the management of fractures that is being overlooked. Why is it that we are having ten, fifty, one hundred cases of non-union of fractures to-day, where we had only one in the decade from 1885 to 1895. My interpretation of that is that in the modern management of fractures with, first, the plaster cast; second, the Lane plate and, third, the instruments and appliances that absolutely immobilize the line of fracture there is not sufficient irritation to stimulate osteogenesis at the line of fracture. We have failed to learn what the Germans learned when they began to use plaster casts. The German surgeon, after applying the cast, starts his patient as an ambulatory case. He moves

around and there is sufficient stimulation of the ends of the fragments to favor osteogenesis and healing of the fracture. The American surgeon, as a rule, puts on a plaster cast and confines the patient to bed for from five weeks to five months, and at the end of that time he is surprised to find not even the slightest effort at regeneration of the bones. Mr. Lane during his last visit in this country emphasized the fact time and again that the Lane bone plate should not be used in cases of non-union. He recognizes the fact that there is something in connection with the fixation of the fragments that retards or at least does not stimulate osteogenesis in non-union cases. Another point which I was glad to have Dr. Freeman mention, because it is a most important one, is putting foreign bodies into compound fractures. If we could only learn to keep our hands, our nails, our screws, our spikes and our bone-splints out of fractures that are in all probability already mildly infected, we would have much better results in the treatment of compound fractures. After swabbing the surface with iodin solution, a dressing of gauze soaked in alcohol should be applied and the whole limb immobilized for many days unless the temperature or other conditions indicate a change.

DR. L. L. MCARTHUR, Chicago: Heartily in favor as I am of the recommendations of Dr. Freeman, I want to emphasize the fact that the statement is not correct that a limb cannot be handled after the use of a plate, whereas it may be handled after the use of the apparatus he described. Having just returned from the Canal Zone, where the opportunities for the treatment of fractures have been surrounded by more difficulties than in any other portion of the world, I want to say that they have found there that the introduction of the Lane plate makes it possible for them to treat the terrible cases of fracture they have had. These fractures are the result of dynamite explosions and crushings; they are usually compound, and these Lane plates have been put on every one of them. I saw 210 roentgenograms of cases that had been plated, and every one showed that a plate can be used in these fractures with good results, and in such a climate as that the plaster-of-Paris cast cannot be used because it becomes limp in a week. Therefore we must not conclude that the bone plate applied in a dirty wound will not enable us to handle the limb like a simple laceration of soft tissues. It can be done.

DR. A. E. HERTZLER, Kansas City, Mo.: I wish merely to throw out a few points as to why non-union occurs when a Lane plate or any other metallic appliance is used. The first step in wound healing is the precipitation of fibrin in the exudate, and anything that prevents that from occurring, prevents healing of the fracture. That is the whole problem. When a piece of metal is placed in a tissue a large amount of exudate is formed which does not coagulate readily or may remain permanently in a fluid state. Different metals act in slightly different ways. Silver produces more of an exudate than any other metal I have tested. Aluminum bronze produces the least. The problem in using a plate is to prevent the collection of this exudate. The best means for doing this is to provide drainage, so that the fluid can escape, or to place the plate in a tissue the least likely to produce exudate. For instance, in the thigh, in which there are large pads of muscles, more of this fluid collects than in the leg. For the same reason less fluid collects on the anterior surface of the tibia than on the external surface. Therefore the plate should be placed in the subcutaneous connective tissue rather than in the muscle bed when this can be done. If we are forced to use a splint where there is much muscle tissue, with the attendant abundant exudate, non-union will occur less often if the excess of exudate is drained away from about the plate until the ends of the bones not in touch with the splint have had time to become imbedded in fibrin—about forty-eight hours.

DR. CARROLL W. ALLEN, New Orleans: Dr. Parham has a method which is particularly applicable in the treatment of spiral or comminuted fractures with which it is not necessary to place a clamp on by screws or to use a nail through an oblique fracture. The instrument consists of two parts: (1) a metal band one-fourth of an inch in width with one end expanded and containing a slit through which the other end is slipped, making a loop; and (2) an apparatus consisting of a screw-rod, working on the principle of an écraseur, between two parallel steel bars for the purpose of drawing up the band and tightening it. In applying the band this is first placed around the bone at the site of the fracture with the oblique fragments adjusted, and one end is slipped through the slit at the other end and then attached to a hook on the screw-rod in part two. The screw is then worked, drawing up and tightening the band around the bone. When it is sufficiently tight the instrument is bent over causing the band to be bent on itself and clinching it. The band is then cut off close with a pair of pliers and the instrument removed.

DR. LEONARD FREEMAN, Denver: You will remember that my plea was not for the universal use of the clamp in preference to the plate, but merely for its more frequent use in suitable cases. Dr. McArthur has made me say that a fractured limb could be picked up by the heel when a clamp was used, but not where a plate was employed. What I really said was that the limb could be picked up just as well when the external clamp is applied, as when the internal plate was used, and perhaps better. He said that in Panama many metal plates were put in. It would be more interesting to know not the number of plates put in, but the number of plates that have had to be taken out afterward. The number is probably considerable. Dr. Hertzler spoke of the reasons for non-union and insisted that drainage would be desirable. This is obtained with the external clamp. One of the main reasons for non-union when the internal plate is employed is that the metal comes in contact with the line of fracture. With the external clamp there is no metal in contact with the line of fracture, or, of necessity, anywhere near it.

A STUDY OF THE USE OF ICE AND OTHER MEANS OF PRESERVING FOOD IN HOMES *

JOHN R. WILLIAMS, M.D.
ROCHESTER, N. Y.

The problem of pure milk is only partly solved with the introduction of clean milk into the home. The cleanest and purest milk may soon become foul if adequate means for its preservation are not used. It is well known that bacteria multiply with great rapidity above 50 F., while below that temperature their growth is held markedly in check. These facts are of importance to mothers and housekeepers, also to milk commissions and dealers, because charges of "bad milk" are often unjustly made against those interested in pure-milk work.

In a recent study of the market milk problem in Rochester, it was noted that for purposes of economy nearly half of the families of the city endeavor to get along without ice. In such homes condensed milk, proprietary milk and dipped milk purchased at the near-by store are mainly used. These facts led me to investigate more intimately the use of ice in homes and the means available for the preservation of food. Five sections of the city, representing socially and economically different classes of people, were studied. Upward of a hundred homes in each district were visited. Information was secured, when possible, along the following lines:

1. Inquiry into the use of milk, means of caring for it, etc.
2. Temperature measurements of refrigerators, living rooms and cellars.
3. The make, size and description of refrigerator.

* Read in the Section on Preventive Medicine and Public Health of the American Medical Association, at the Sixty-Fourth Annual Session held at Minneapolis, June, 1913.

4. The amount of ice used weekly and yearly, the cost of the ice, name of dealer, etc.

During the warm months of the year, milk is delivered during the night or early morning, on an average of three hours before the family is awake. When no box is provided for receiving it, it must be deposited on the door-step where it is exposed to the heat, dust and the attentions of the domestic animals of the neighborhood. Few homes in those sections occupied by working people are equipped with boxes for receiving milk. In an investigation on this point, of 604 homes examined, only eleven had milk boxes. Houses in the well-to-do sections are better equipped, for 359 out of 411 had proper facilities for receiving milk. The exposure of milk to warm air for three hours or more is sufficient to raise its temperature at least 10 degrees.

The usual means of preserving perishable fresh foods in the home is to store them in a cool place as the pantry, cellar or refrigerator. When the latter is not afforded, either the cellar or living-room is used. In a former and more extended inquiry into the use of ice in all parts of the city, it was learned that 2,243 homes of 5,431 examined did not use ice. In the present and more limited investigation, in which the very rich and very poor were largely avoided, 161 homes of 519 studied were not using ice any of the time. It is probably within the truth to say that half of the homes in the city rely the entire year on the cellar or pantry for their food preservation, and that more than three quarters of the homes deny themselves the use of ice, excepting for a few weeks during midsummer.

Fig. 1.—The wasteful method of ice distribution. There is a different ice dealer for each five to fifteen consumers on every street.

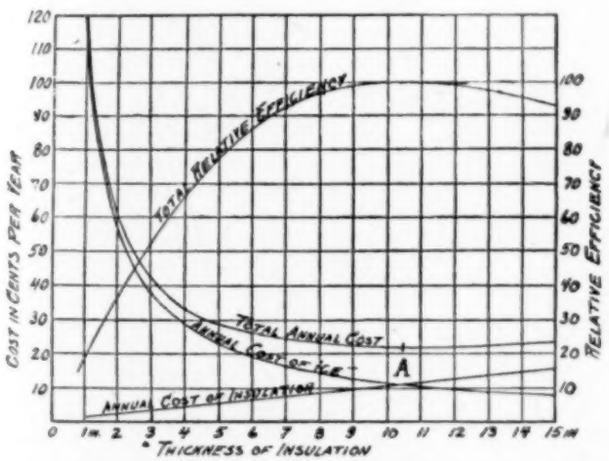


Fig. 2.—Chart (Lundgard) showing the relation of thickness of refrigerator wall made of the best insulation to the efficiency of the refrigerator, and also the comparative cost for operation per square foot of wall surface.

In view of these facts temperature observations of cellars and living-rooms where food is stored, as well as refrigerators, are of importance. In Table 2 it will be seen that not one living-room was found having a temperature below 60 F., nor was one cellar discovered having a temperature below 55 F. It is clearly evident therefore that these rooms during the warm months of the year, at least, are not sufficiently cold to protect food from bacterial decomposition.

In the study of ice-boxes, 243 were examined. Of these only 103 had a temperature below 50 F. The other 143 registered above that temperature and were therefore worthless for preserving food. As would be expected, a better class of refrigerators is to be found in the homes of the well-to-do; nevertheless, 45 per cent. of these had temperatures above 50 F., while nearly 70 per cent. of those found in the homes of the working people exceeded that temperature.

The main reason for the inefficiency of these refrigerators is to be found in their defective construction and insufficient insulation. Most of them are wooden boxes built of half-inch lumber, and are lined with galvanized

TABLE 1.—USE OF ICE AND MILK AND THE NUMBER OF DEALERS ENGAGED IN THEIR DISTRIBUTION*

Section	No. Homes Studied	No. People in Homes	No. Homes Taking Ice	No. Ice Companies Supplying Section	No. Milk Dealers Supplying Section	No. Homes Having Milk Boxes
Well-to-do	143	613	134	8	30	91
American laboring ...	118	509	71	7	27	14
Jewish laboring	155	785	120	17	48	15
Germ.-Amer. laboring.	49	210	29	7	22	[illegible]
Italian laboring	54	199	4	..	..	[illegible]
Totals	519	2,316	358	..	..	124

* The foregoing data do not fully show the waste in ice distribution occasioned by the overlapping of routes. There is a different ice company on every street for each five to fifteen consumers. In the first section, on Dartmouth Street there is a different distributor for each eight consumers. In the Jewish section, on Baden Street eight ice dealers supply forty-eight homes. In the American laboring section on Adams Street there is an ice dealer for each four consumers.

TABLE 2.—TEMPERATURES OF REFRIGERATORS, LIVING-ROOMS AND CELLARS DURING MONTH OF AUGUST, 1912, ROCHESTER, N. Y.

Section	Refrigerators				Living-Rooms			Cellars		
	Below 45°.	45° to 50°.	51° to 60°.	Above 60°.	Below 60°.	60° to 70°.	Above 70°.	Below 55°.	Below 60°.	Above 60°.
Well-to-do ...	27	34	48	1	0	64	35	0	6	78
American laboring	1	10	18	10	0	24	11	0	22	29
Jewish laborboring	16	14	34	8	0	28	44	0	0	75
German-American laboring	1	0	19	2	0	4	18	0	4	29
Italian laboring	0	0	0	0	0	0	0	0	0	10
Totals	45	58	119	21	0	120	108	0	32	221

SUMMARY

Refrigerators studied	243
Refrigerator temperatures below 50 F.	103
Refrigerator temperatures above 50 F.	140
Refrigerators in well-to-do section below 50 F.	61
Refrigerators in well-to-do section above 50 F.	49
Refrigerators in laboring section below 50 F.	43
Refrigerators in laboring section above 50 F.	91
Number of cellars or living-rooms below 55 F.	0
Number of living-rooms examined.	228
Number of cellars examined	253

iron or zinc. The walls vary in thickness from less than 2 inches to less than 4 inches (see Table 3). The space between the metal lining and the wooden sides usually contains insulating material, as paper, felt or mineral wool. In many of them nothing more is to be found than a sheet or two of paper. Since the efficiency of a refrigerator depends in large part on the character and thickness of the insulating material, consideration must

TABLE 3.—THICKNESS OF WALLS OF REFIGERATORS *

Section	Less than 2 in.	2 in. to 2¼ in., inclus.	2¼ in. to 2¾ in.	3 in. or more
Well-to-do	5	36	34	19
American laboring	9	23	4	3
Jewish laboring	17	42	8	1
German-American laboring	4	13	3	1
Italian laboring	0	0	0	0
Totals	35	114	49	24

* A properly constructed box, to be economically operated, should have a wall of efficient insulating material at least 6 inches thick. Such a box at the current price of ice will have a theoretical efficiency of about 80 per cent. The 149 refrigerators whose wall thickness is less than 2¾ inches, even were they made of the best possible construction, could not have an efficiency above 40 per cent. The remaining seventy-three refrigerators with walls averaging less than 3 inches could not have an efficiency above 50 per cent. As a matter of fact, with the shoddy and imperfect insulating materials used, most of the ice-boxes in common use rate far below their theoretical efficiency.

TABLE 4.—NUMBER OF MONTHS ICE IS USED DURING YEAR BY HOMES IN VARIOUS SECTIONS OF ROCHESTER *

Section	1 mo.	2 mos.	3 mos.	4 mos.	5 mos.	6 mos.	7 mos.	8 mos.	9 to 12 mos.	Total
Well-to-do	0	2	5	15	22	24	15	8	33	124
American laboring	1	6	10	14	21	3	4	4	3	66
Jewish laboring	0	4	16	26	47	15	5	1	1	115
German-American laboring	1	1	4	8	15	0	0	0	1	30
Italian laboring	0	0	2	0	0	0	0	0	0	2
Totals	2	13	37	63	105	42	24	13	38	337

* This table shows, among other things, the seasonal character of the use of ice. This adds greatly to the cost of distribution, because it necessitates a large investment in equipment, most of which is idle during half the year.

be given to these factors. It has been proved both experimentally and practically that confined air or a partial vacuum are the best insulators. Indeed, it is the air entrapped within its cellular structure which retards the passage of heat through a material and gives it insulating value. The air must be confined, for circulating air is a good medium for the conduction of heat. A good insulator therefore must have a physical structure which will hold air within its cells or between its fibers. Moreover, it must be water-proof. Moisture, because of its greater power of heat conductivity, is a fatal enemy to perfect insulation.

A refrigerator wall which contains a space large enough to permit of air circulation will be found defective. Wood, felt, mineral wool, charcoal, sawdust, wood-ashes, etc., are fairly efficient when they are dry, but when damp or wet their efficiency markedly declines. When an efficient insulator is used there is very little difference between the temperature of the inside of the box and the temperature of that side of the metal lining which is next to the insulating material, consequently there will be very little deposition of moisture on the metal lining to be absorbed by the insulator. When the insulator is inefficient, however, the temperature difference is considerable and there is marked condensation of moisture on both sides of the metal lining. If this moisture is absorbed by the insulator it materially lessens its efficiency. In any event it causes the metal lining to corrode and makes the box damp and insanitary. Most of the commonly used insulators take up moisture with avidity, and for this reason most of the cheap refrigerators in common use will be found coated on the inner side of the inside wall with slime and the mineral salts resulting from the metallic corrosion.

Properly made cork board is probably the best-known and most efficient insulating agent. It is made of ground cork pressed into slabs and heated until the resins in the cork cement its particles together. It is to the remarkable physical structure of cork that its insulating efficiency is due. It consists of a woody material, filled with tiny air cells through which air circulation is not possible; moreover, it is impervious to moisture.

The comparative value of dry wood and the best cork board is as 1 is to 5; that is to say, 1 inch of cork board is equivalent in insulating value to 5 inches of wood. Since it requires 6 inches of cork board to give approxi-

TABLE 5.—NUMBER OF HOMES USING VARIOUS AMOUNTS OF ICE WEEKLY

Section	50 lbs. or less.	75 lbs.	100 lbs.	100 to 200 lbs.	200 to 300 lbs.	300 lbs. plus.	Total.
Well-to-do	0	3	22	74	24	11	134
American laboring	11	15	18	23	2	1	70
Jewish laboring	5	18	8	16	2	0	49
German-American laboring	3	5	8	15	0	0	31
Italian laboring	4	0	0	0	0	0	4
Totals	23	41	56	128	28	12	288

TABLE 6.—PRICE PAID FOR ICE PER YEAR; DATA FROM 321 FAMILIES *

Section	Under $5.	$5 to $10.	$10 to $15.	$15 to $20.	$20 and over.
Well-to-do	6	36	33	13	34
American laboring	34	16	5	1	4
Jewish laboring	22	72	10	6	1
German-American laboring	8	14	1	1	0
Italian laboring	4	0	0	0	0
Totals	74	138	49	21	39

* Two hundred and twelve families pay $10 or less per year; 109 families pay more than $10 per year. It is worthy of note that at least 75 per cent. of the money each family pays for ice is wasted, partly in the uneconomical method of distribution, but chiefly in the inefficiency of the refrigerators.

mately 80 per cent. of efficiency in cooling, at the current prices of ice, it follows that few refrigerators in common use have an efficiency above 25 per cent. Indeed, the low-priced boxes used in the homes of working people are probably less than 15 per cent. efficient. This means that of 100 pounds of ice put into the refrigerator, at least 80 pounds are used in neutralizing the heat which percolates through the wall. It is worthy of note that the market is flooded with these shoddy ice-boxes. No less than seventy-five different makes were

found among the 243 examined. Few of them bear the names of their makers, which suggests that the manufacturer is not proud of his handiwork.

The rate paid by the consumer for ice varies according to the amount used, the amount taken at each delivery, and the ability of the purchaser to pay for it in advance. Poor people living near the railway tracks get it at the cars for 20 cents per hundred pounds. If it is delivered to their homes they pay from 40 to 75 cents per hundred pounds.

The cost of harvesting and storing natural ice is so variable that it is difficult to determine it even approximately. It is probably within the truth to say that it costs less than $2 per ton. It costs between $2 and $2.25 per ton to make artificial distilled-water ice, although by some of the newer methods this cost has been materially reduced. The consumer pays the dealer the difference betwen $2,25, the cost of manufacture, and $8.50 per ton, or $6.25 for distribution. Thus the cost of distribution is nearly three times the cost of manufacture. One reason for this is the wasteful method employed. In Rochester a different ice company will be found supplying each five to fifteen consumers on every street, necessitating a tremendous waste in labor and delivery equipment.

CONCLUSIONS

The data gathered in this investigation warrant the following conclusions:

1. The temperatures of cellars or living-rooms in dwelling-houses are not sufficiently low during the warm months of the year to protect milk and other perishable foods from rapid bacterial decomposition. Therefore an efficient refrigerator in the home is a necessity.

2. Most of the refrigerators in common use are almost worthless and grossly uneconomical.

3. There is a large field for the manufacturer who will make a properly insulated and efficient box which can be sold at a moderate price.

4. If more economical methods of ice manufacture and distribution were employed, the cost of ice to the consumer could be materially lowered.

5. If to this saving were added that which would result from proper ice-box construction, refrigeration vastly superior to that now found in the average home could be had for at least one-fourth the present cost.

388 Monroe Avenue.

ABSTRACT OF DISCUSSION

DR. L. S. B. ROBINSON, St. Paul: The preservation of the lives of babies among the poor often depends on the ability of the family to obtain ice, the cost of which is often prohibitive. The people of St. Paul are at present witnessing the formation of an ice trust, and in another year or two they expect to see the monopoly completed and the price increased. The Fabian Society has been holding meetings in St. Paul for the last three weeks to arouse public sentiment for a municipal ice plant. As president of the society, I have given the ice business in different parts of the country careful study and the cost as we have found it is even less than the figures Dr. Williams gives.

In a cold climate like ours natural ice is cheap. Men who have been in the business tell us that an ice-house on the shore of a lake can be filled for ten cents a ton; freight into the city is estimated at forty cents a ton. If ice is cut from a nearby lake and hauled at once to an ice-house in the city it has been put up there at a cost of fifty cents a ton. From 40 to 45 per cent. is allowed for shrinkage, so that nearly double the amount sold must be harvested. We are therefore safe in placing the cost at one dollar a ton.

Distribution is the expensive item. The testimony of men in the business and the books of those bought out last year show that they do not pay over $1.50 per ton for delivering ice into the ice-box. That makes a total of $2.50. The selling price is $7 a ton. We have demonstrated that the municipality could undertake the business at $4 a ton, pay the same wages for much shorter hours of labor and still have enough profit to pay all overhead charges and retire the bonds after one year on a harvest of a quarter of a million tons.

In Tucson, Ariz., the Santa Cruz (artificial) Ice Co. reports ten years' experience. On a charge of twenty-five cents per hundred pounds, or a rate of five dollars a ton, they have set aside 5 per cent. for depreciation and made 15 per cent. dividends on their investment, even in such a hot climate. That the municipality could deliver ice to the consumers for about half the present price is plain on careful study.

DR. J. R. WILLIAMS, Rochester, N. Y.: I have been asked to describe a simple, model ice-box. An ice-box, such as I have in mind, may be made by anyone handy with tools or by a carpenter at a small cost for labor. It should be made of cork-board, which comes in slabs of any desired thickness and in convenient lengths and widths. A skeleton frame of wood should be made of the shape and capacity of the ice-box desired. On this frame should be tacked the cork-board slabs, which should first be coated with tar or asphaltum. One surface should be left for the door. After the first layer of slabs has been attached to the frame, a second layer should be applied, over the first, the two being cemented together with tar or asphaltum and the slabs toe-nailed to each other. Care should be taken to lap the joints in fastening on the slabs. The cork-board should be at least 2 inches thick. After the box has been made, the frame should be removed and the inside and outside of the box coated with a very hard-surface cement about one-fourth of an inch thick. A door may then be made of wood, with a cork-board lining. It should be beveled and fit as tightly as possible into the door-frame which should also be made of wood. A small box such as I have in mind may be made for about twelve dollars. It will have far greater efficiency and almost as much capacity as a forty dollar refrigerator.

How much one is justified in paying for a refrigerator depends largely on the cost of ice. If ice is to be had for small cost, one can afford to waste it in poor insulation, but if ice is expensive, and it is in most American cities, it will be found economical to provide good insulation, which means the purchase or making of a good refrigerator. A small, efficient, built-in refrigerator should be a part of the equipment of every small home, just as much as is the bath-tub or furnace.

The community should control the manufacture as well as the distribution of ice, to the end that it may be had freely and cheaply by all its citizens. By the most approved methods, artificial ice can be made for about $1.10 per ton. By the older methods, still commonly used, it costs about $2.10 per ton. The average cost of ice distribution, of all business, in several American cities, is about $3.25 per ton. The consumer now pays about $6 per ton for distribution.

Infant Mortality in Bavaria for 1912.—According to the tables of the Royal Statistical Institute, 37,006 children under one year died in 1912, exclusive of stillbirths. This is a diminution compared with the previous year of 9,659 or 20.7 per cent. Among these there were 30,855 legitimate and 6,151 illegitimate children. If the number of infant deaths in this year is compared with the births, the infant mortality in 1912 amounted to 17.7 per cent. and that for 1911 to 23.3 per cent. About a third of the infants born did not live through the first month and more than half failed to survive their first quarter. The statistics show that illegitimate children have a greater relative mortality, especially in the first months of life than children born in wedlock. The mortality is relatively slightly greater in the country. The summer months of 1912 do not show so high a death-rate as those of 1911, a difference due to the excessive heat of the summer of 1911. As is well known, the danger from the heat is best avoided by breast-feeding, careful handling of the milk supply for infants, not overloading infants with clothing, and care in cooling the living-rooms.

CLINICAL OBSERVATIONS ON ESSENTIAL HEMATURIA*

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For want of a more accurate term, I have retained that of "essential" for the type of hematuria which has not as yet been explained by any of the definitely established renal conditions causing hemorrhagic urine. The term "essential" should be limited to those cases of hematuria in which there is neither clinical evidence of renal insufficiency, visible organic change in the renal parenchyma nor any evidence of renal infection. The operative records of the Mayo clinic up to June 1, 1913, show twenty-six patients operated on for renal hematuria for which no evident cause could be found, and the clinical records show fifty-one patients not operated on in which the clinical diagnosis of essential hematuria was evident.

SYMPTOMATOLOGY

Sex.—Of the 77 patients, 58, or 75 per cent., were males and 19, or 25 per cent., females. The preponderance of males is noteworthy and is in keeping with that of renal infection occurring in the male.

Age.—At the time of examination 6 patients were under 30 years, 10 between 30 and 40, 24 between 40 and 50, 17 between 50 and 60, and 12 over 60. The majority of cases occurred in persons between the ages of 40 and 50, while only a small number of patients were below 30 years.

Localization.—On cystoscopic examination the disease was localized to the right side in 51 cases and to the left side in 26. Pain was described as a dull ache across the sacrum in 10 of the 77 cases, in either lateral abdomen in 6 cases, but never to such a degree as to be of any practical significance. It was described as severe in 5 cases, and then only with hematuria, the pain evidently being caused by blood-clots blocking the affected ureter.

Duration of Symptoms.—Of the 26 patients operated on, hematuria had first appeared over a year before in 16, or 61 per cent., over 5 years in 10 cases, or 38 per cent., and 15 years or more in 5 cases, or 19 per cent. It had continued prior to operation for a year or more in 5 cases, or 19 per cent., over 3 months in 18, or 69 per cent., and over a month in all but three of the cases. Of the 51 patients not operated on, hematuria was noted less than three months before in 23 cases, over a year before in 12, or 23 per cent., over 5 years in 10, or 19 per cent., and over 10 years ago in 5, or 9 per cent.

Physical Findings.—In three of the cases the affected kidneys appeared to be enlarged, on palpation, as though there might be tumor, but at operation they were found to be large, normal kidneys. In three other cases the kidney was described as low-lying and movable, in two of which the condition was found bilateral. Evidence of a central nervous lesion or marked neurosis was absent in all. In the 34 cases in which the blood-pressure was recorded the average was 132; in 2 cases it was more than 150. Ophthalmoscopic findings were practically negative in all. The general strength was lowered to such a degree that 19 of the 26 patients operated on were unable to carry on their daily occupation and only 6 of the 51 patients not operated on. The average hemoglobin estimate of the patients operated on was 63 per cent., while that of the patients not operated on was 84 per cent.

Urinalysis.—The specific gravity of twenty-four-hour specimens taken in 21 of the cases in which there was operation was below 1.015 in but 3 cases. In the other cases the average was 1.023. Albumin in varying amounts was found in all the cases in which operation was performed, as was to be expected as a result of the hematuria present at the time of examination. A few hyaline casts were found in 4 cases and occasional granular casts in 2 cases. A few microscopic pus cells were found in 5 of the cases in which the patients were not operated on.

Hematuria.—The hematuria was reported as being present in a marked degree in 54 cases, or 70 per cent., and but slightly in 23 cases, or 30 per cent. In 63 cases it varied in degree at various times.

Pyelogram.—The pyelogram with essential hematuria necessarily shows the outline of a normal pelvis. Evidence of abnormality would call our attention to the probability of some other condition being present even though no other symptoms were found.

DIFFERENTIAL DIAGNOSIS

The diagnosis of essential hematuria is most often confused with that of chronic nephritis, infectious nephritis, pyelitis, neoplasm, tuberculosis and lithiasis.

Chronic Nephritis.—The hematuria of nephritis is sharply defined from that of essential hematuria. It is usually present in a lesser degree and may vary from day to day. Scanty urine and the presence of many granular casts, edema, headache, increased arterial tension, lesions in the retina, any or all of which characterize nephritis, are necessarily absent with essential hematuria. Borderline cases which may have some characteristics of both conditions rarely occur. The conditions are usually widely separated clinically and it is difficult to understand from a clinical point of view how any relationship can be traced between the two conditions. When hematuria occurs with chronic nephritis, it is usually regarded as a terminal symptom, whereas it may be disregarded in a case of proved essential hematuria.

Infectious Nephritis.—Chronic infection in the kidney may be the cause of hematuria often resembling that of essential hematuria. It may appear insidiously without clinical evidence of infection other than microscopic pus and bacteria in the urine. More often, however, it is characterized by attacks of dull pain referred to one or both kidneys, chills and fever, together with microscopic pus, bacteria and gross hematuria. The hematuria is usually slight or comparatively moderate in degree. It may be present only during the acute attack or it may appear irregularly without the clinical evidence of infection. Pain, which is usually slight with essential hematuria, may be marked with the infectious nephritis, and is more often accompanied with fever and chills and other evidence of infection. The infecting organism can usually be identified in the urine taken under aseptic precautions. As Billings[1] has reported, the hematuria and other symptoms may disappear on administering autogenous vaccine. This was the result in one of four cases in which the vaccine was tried at the Mayo Clinic. The clinical evidence of renal insufficiency is usually absent until late in the disease. Although this condition is more often bilateral, four patients have been operated on in whom the clinical findings and subsequent course would indicate that the infection was unilateral. In these cases the kidney was found at operation to be

* Read in the Section on Genito-Urinary Diseases of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913

1. Billings: Am. Jour. Med. Sc., 1910, cxxxix, 625.

smaller than normal, soft and irregular in contour. On section cicatricial changes of evident previous infection were apparent. Needless to say, with essential hematuria the urine should be free from pus and bacteria. The cicatricial changes in the pelvic outline of infectious nephritis as shown in the pyelogram are not usually extensive enough to be of diagnostic significance.

Bleeding Pyelitis.—Hematuria is occasionally present with chronic infection of the renal pelvis. It occurs with a chronic indolent infection confined largely to the pelvis and without much active destruction of the substance of the kidney. The infective process may involve the tissues about the renal pelvis and the adjacent ureter to a varying degree. Subsequent cicatricial contraction and adhesions will bind the pelvis and renal pedicle firmly and distort the pelvic lumen. When the upper ureter is involved it may either become dilated or partially constricted as a result of the cicatricial process. The mucosa of the pelvis in such cases shows irregular areas of inflammation and congestion which bleed on touching, and on close inspection appear to be granular. Between these areas the mucosa may be seen pale and glistening as the result of the chronic cicatricial changes. On microscopic examination the granular mucosa shows a papillomatous proliferation of cells. The latter condition was first described by H. Chiari[2] and recently by von Frisch,[3] and is called pyelitis granulosa. Occasionally the papillae alone are involved and the hematuria may result from the consequent papillitis. The hematuria which is seen occasionally with extensive hydronephrosis is caused by a similar condition in the mucosa, as the evident result of a chronic indolent infection. Clinically, hematuria of pyelitis may be subjectively differentiated from the essential hematuria by the character of the pain which frequently accompanies pyelitis. It is usually a dull, persistent pain with irregular acute exacerbations occurring without evident cause. Pain with essential hematuria is exceptional and occurs only as the result of an occluding blood-clot. Bleeding pyelitis might be confused with that of infectious nephritis, which, however, occurs more often in typical attacks with chills, fever and slight hematuria. On urinalysis microscopic pus will always be found present with pyelitis granulosa. Because of the indolent type of the infection but a few pus-cells may be present among the red blood-cells. Needless to say, only the specimen obtained by ureteral catheterization is of value, because pus-cells in the voided urine may come from any extrarenal source. The most accurate method of differential diagnosis is obtained through pyelography. The outline of the pelvis and adjacent ureter will appear irregularly narrowed and dilated. One or more of the calices may be irregularly dilated; more often they are effaced.

Neoplasm.—Although the hematuria of neoplasms is often present to a marked degree like that of essential hematuria, it usually persists but a short time and appears at irregular intervals. Unfortunately the occasional short hemorrhage does not cause the average patient to consult a physician so often as the protracted one. The presence of tumor will usually identify the nature of the hematuria, but in twelve of ninety-one patients operated on for malignant tumor of the kidney at the Mayo Clinic, definite tumor could not be determined clinically. It is this group of tumors which is easily confused with essential hematuria. Two methods are available in identifying the existence of a surgical condition, namely, pyelography and the renal functional estimate. It has been shown that the kidney with essential hematuria will not manifest any marked decrease in functional activity as measured by the secretion of phenolsulphonephthalein injected. It has been my experience that non-infected neoplasms without hematuria will show decrease in function in but 25 per cent. of cases. Unfortunately, renal tumors too small for definite palpation would show even a smaller percentage. Furthermore, profuse hemorrhage offers considerable technical difficulty in the accurate estimation of the amount of dye secreted. With marked comparative reduction of functional activity of the bleeding kidney, however, the existence of neoplasm should be suspected. Pyelography will more often be of value in ascertaining the existence of neoplasm by demonstrating an abnormal outline of the renal pelvis subsequent to tumor-retraction. While recognizable deformity of the pelvis may be demonstrated in over two-thirds of tumors of the kidney that come to operation, early tumor may not show recognizable deformity. Nevertheless, any tumor that is so far advanced as to cause hematuria will probably cause recognizable pelvic deformity. Even after all possible clinical evidence has been obtained, the question will often be raised whether or not operation is indicated. Tumor of the kidney was discovered at operation in two cases in which the clinical evidence rather suggested essential hematuria.

Renal Tuberculosis.—Occasionally the first and only evidence of renal tuberculosis is hematuria. In such cases the hematuria will usually be well marked and persist but a day or two, often showing but one hemorrhage. In the absence of pus in the urine and other evidence of tuberculosis on physical and cystoscopic examination, its existence could easily be overlooked. If there is any probability of tuberculosis, guinea-pig inoculation should always be made. Of three cases of hematuria regarded on clinical examination as being essential, two were proved to be tuberculous on subsequent examination, and in one the patient was reported as having died of renal and pulmonary tuberculosis.

Lithiasis.—A small stone pocketed at the end of a calix may be the cause of an otherwise symptomless hematuria and remain undiscovered even with the most careful roentgenographic technic. Urinalysis will usually show the presence of old blood-cells but no pus. A careful search should also be made for crystals, particularly those of calcium oxalate, which, if present in a considerable quantity, would be very suggestive of the existence of stone. On exploring in two cases regarded clinically as essential hematuria, such a stone was found at the end of a calix in one. In the other case a stone 2 cm. in diameter was found in the cortex, which, because of its soft character and the unusual obesity of the patient, did not show in the roentgenogram. Two more patients regarded clinically as having essential hematuria but not operated on reported having passed small stones several months after returning to their homes.

Renal Varix.—With the publication of a case showing angioma of the renal papilla, Fenwick[4] advanced a new explanation for a certain group of cases which had hitherto been called essential hematuria. It was at first believed that this condition would explain a large proportion of cases of essential hematuria. Recently a number of such cases have been reported in American literature. These might give the impression that the condition is a common one. Any report of such a condition without a microscopic section showing the dilated condition of

2. Chiari, H.: Med. Jahrb., 1881, 9.
3. Von Frisch: Verhandlungen d. deutschen Gesellsch. f. Urolog., II. Kongress in Berlin, April 19-22, 1909, 270.
4. Fenwick: Brit. Med. Jour., June 17, 1905.

the papillary blood-vessels cannot be of accurate value. Clamping the pedicle and consequent congestion of the tissue of the kidney may cause the papillae to appear so engorged as to give an impression of abnormality. True angioma is a comparatively rare condition and can explain but a very small percentage of bleeding kidneys. One such case has come under our observation in which microscopic section showed the typical dilated structure of the blood-vessels. The condition may be readily confused with the varicose condition of the blood-vessels adjacent to the pelvis as the result of insidious infection in the pelvis and surrounding tissues. With infection of the tissues the veins of the papillae will occasionally be found dilated on microscopic section. Leukoplakia of the pelvis was discovered on exploring the pelvis of the kidney in a case believed on clinical examination to be bleeding, because of essential hematuria. Pyelography will not as a rule be of much value in identifying the changes which affect the pelvic outline but moderately.

After-Course.—Of the 26 patients operated on, nephrotomy was performed in 12 cases and neprectomy in 16. Exploration was made in 1 case. In 2 of the 12 patients in whom nephrotomy was made the hematuria persisted to such a degree that nephrectomy was necessary in 1 case three months and the other four months after the first operation. In 1 case of nephrectomy hemorrhage through the wound persisted necessitating nephrectomy two days after nephrotomy. In 1 other case of nephrotomy made four years ago the patient reports occasional hematuria in a diminished degree. The 8 patients reporting recovery following operation were operated on 1 six years, 1 four years, 2 three years, 2 two years, and 2 one year ago. In the patient operated on four years ago, hemorrhage was reported occurring a year after operation but none since then. Of the 16 cases of nephrectomy, 1 patient died elsewhere six months after operation from some unknown cause, and 1 was not heard from. Fourteen patients are living and are reported in excellent health 1 twelve years, 1 eleven years, 3 eight years, 1 nine years, 2 six years, 2 four years, 1 three years, 1 two years and 3 two years after operation. It will be noted, therefore, that nephrotomy is not to be regarded as a certain method of cure. The fact that recovery followed in 8, or 67 per cent. of the cases, should recommend it, provided the affected kidney appears quite normal on exploration. On the other hand, the excellent results obtained from nephrectomy should recommend such procedure providing the hemorrhage prior to operation had been severe enough to warrant it, that the patient's general condition was otherwise good and that the functional activity of the other kidney was previously ascertained. Of the 51 cases not operated on, we were able to trace but 44. In 26 of these cases the affected kidney was merely catheterized, with cessation of hematuria following. This cessation of symptoms remained permanent in but 4 cases. In 18 cases the pelvis was overdistended with methylene blue or colloidal silver solutions with permanent cessation of hematuria in but 3 cases. In 6 cases epinephrin (adrenalin chlorid P. D. & Co.) in solutions in 1:2,000 as advanced by Young[5] was introduced into the pelvis of the affected kidney. Recurring hematuria was reported in all cases except one treated six months ago. In one of two cases treated three years ago, hematuria was reported stopped over a period of one and one-half years. Horse-serum was injected in two cases, and human serum, as suggested by Barringer,[6] in one case with no immediate cessation of symptoms.

Treatment.—From the foregoing results it would seem advisable, as a rule, to treat essential hematuria conservatively. Needless to say, every means of diagnosis should be employed before exploration is undertaken. It has been our rule not to advise surgical exploration unless the hematuria was so marked as to incapacitate the patient or whenever evidence existed which suggested the possibility of neoplasm. The question of whether or not to explore for a possible neoplasm is one of the most difficult problems to solve in the clinical examination of hematuria. The possibility of renal tumor in a patient over 40 years of age whose general condition is below par and who has no clinical evidence of nephritis would justify surgical exploration even though the hematuria itself were not severe enough to warrant it. Exploration is not justifiable when no clinical evidence exists other than one or two spells of hematuria. In such cases ureteral catheterization or any of the various methods of renal pelvic irritation, such as overdistention, pyelography, epinephrin, etc., should first be tried, or, as has been recently suggested, the injection of blood-serum. An occasional moderate hematuria without other clinical symptoms recurring after these measures have been tried should not necessarily require any form of treatment. When the hematuria has incapacitated the patient, however, or when neoplasm is regarded as possible, exploration is indicated. The good results obtained from nephrotomy would justify its use provided nothing is found wrong with the kidney on exploration. If, on exploration, however, any evidence of previous infection or tissue-destruction exists or if nephrotomy should fail to stop the bleeding, nephrectomy is indicated.

Etiology.—Of the various etiologic factors that have been advanced to explain essential hematuria, nephritis seems at present to have the most supporters. Of recent years pathologic evidence in support of this theory has been advanced by Israel, Nichols, Kretschmer, Kapsammer, Stoerk and others. Microscopic examination of bleeding kidneys removed at operation and postmortem discloses areas of greater or lesser extent with varying degrees of nephritis in practically every case if carefully searched for. An examination of the pathologic material of bleeding kidneys removed at the Mayo Clinic shows eleven specimens. Of this number, three show nothing but a few glomeruli with cicatricial changes, one is quite normal on serial section, and the others show moderate degrees of increase of interstitial connective tissue as well as glomerular changes. None of them show the marked destructive changes found with clinical chronic nephritis. Section of kidneys removed in the last 320 post-mortem examinations of patients (Broders) who had no clinical evidences of advanced renal disease, shows some evidence of nephritis in 200 cases, or 63 per cent. In none of these cases had hematuria ever been reported and none had clinical evidence of nephritis. On comparing microscopic sections it was impossible to differentiate the character of the microscopic changes found in the bleeding and non-bleeding kidneys. It is quite evident that there must be some other factor involved which causes one of two kidneys to bleed when the microscopic changes are quite similar. Because nephritic changes are found in a bleeding kidney it does not necessarily follow that nephritis causes the hematuria.

The clinical evidence obtained on examination and observation of the after-course of patients suffering with

5. Young, Hugh H.: The Cure of Unilateral Renal Hematuria by Injection of Adrenalin through a Ureter Catheter, THE JOURNAL A. M. A., May 18, 1907, p. 1654

6. Barringer: Am. Jour. Urol., May, 1912.

essential hematuria does not support any nephritic etiology. Four of the patients operated on and three of those not operated on gave histories of hematuria of fifteen years or more prior to examination. If the hematuria were one of the earliest symptoms of nephritis the progress has been rather slow. Furthermore, the number of patients who have been entirely well five years or more since nephrectomy is not in keeping with the usual course of a patient suffering with chronic nephritis from whom one of two diseased kidneys are removed. Whatever the cause of the hematuria may be, if systemic, it apparently does not tend to shorten life, at least to any great extent. In support of the nephritic theory it has been advanced that many cases show traces of albumin or occasional casts in the urine in the interval when no hematuria is present. The routine examination of the urine of five thousand patients examined consecutively at the Mayo clinic during the past year shows a trace of albumin in 1,450, or 29 per cent. Less than a hundred of these patients had any clinical evidence of nephritis and none of them had essential hematuria. The overwhelming proportion of patients with albuminuria as compared with those suffering from hematuria demands further explanation than that of nephritic change. Furthermore, the term "nephritic" is an unfortunate one for this type of hematuria now called "essential," and tends to confuse it with the hematuria accompanying acute and chronic nephritis, which is clinically quite distinct.

ABSTRACT OF DISCUSSION

DR. J. R. CAULK, St. Louis: There has been a growing tendency to attribute many of these cases of renal bleeding to nephritis, and I was glad to hear Dr. Braasch condemn this and also to hear him advocate conservatism in treatment. There is no disease—if we may call it a disease—which requires more careful diagnosis than this.

Two cases within the last year have exemplified this to me. Both of them presented clinical evidences of nephritis—albumin, casts, high arterial tension, and general evidences of nephritis—and both have cleared up immediately after pelvic injections of epinephrin (adrenalin). I think that we have to be extremely careful, for so many men are advising immediate renal decapsulation or nephrotomy. Before any such procedure is ever attempted, I think one should always try to eliminate the renal pelvis as a source of the bleeding by injections into the renal pelvis of epinephrin, of horse-serum, or of something of the sort.

DR. O. S. FOWLER, Denver: I should like to ask how many of the cases in which operation was refused were bilateral? In looking for casts in these cases of hematuria, we should never centrifuge the urine. If we centrifuge it we get so many blood-cells that they obscure all the casts. That was the case in a patient of mine. The examination was made by a competent pathologist who failed to find casts. He had centrifuged the urine. An uncentrifuged specimen showed casts.

DR. A. L. CHUTE, Boston: It seems to me that a focal nephritis, not an interstitial nephritis, might explain some of these cases of hematuria. A patient I saw two years ago had had this bleeding for sixteen months. The hemoglobin percentage was low. I cut down on the kidney. I thought that I could feel a nodule in it, and therefore removed the kidney. It showed absolutely nothing in the way of a neoplasm, but it did show a condition that the pathologist said was nephritis. The patient had had a low blood-pressure. The nephritis followed a pneumonia. I do not see why we should not have a focal nephritis in cases in which the infection has cleared up and yet the pathologic change remains. That is my explanation of some of these cases.

DR. W. F. BRAASCH, Rochester, Minn.: As Dr. Chute has suggested, we undoubtedly do occasionally observe cases of chronic renal hematuria with clinical evidences of nephritis, in which the bleeding simulates that of so-called essential hematuria. There is such a large number of cases, however, in which there is no other symptom than hematuria, in which, after years of observation, no clinical evidence of nephritis develops and in which little or no evidence of nephritis can be found on surgical exploration, that we must conclude that there is some factor other than slight histologic nephritis which causes the hematuria.

We had two cases that were bilateral, in both of which the hematuria was on one side at one time and on the other at another time. I should not regard a bilateral condition a contra-indication to operation, provided that the patient was not weakened from loss of blood and was otherwise normal. I never have seen simultaneous hematuria in both kidneys.

THE VALUE AND LIMITATIONS OF FUNCTIONAL RENAL TESTS*

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In ascertaining the functional capacity of the kidney, judicious selection of tests is the key to the maximum amount of information from the minimum expenditure of time and energy. The number of tests is now so large that it is impossible to utilize all in any individual case. It is unnecessary, moreover, since all of the available information is forthcoming at times from a single test or from a proper combination of a small number of tests. In order that the proper selection may be made, however, an insight into the value, limitations, advantages or disadvantages, peculiarities and significance of the findings, together with intimacy with technic concerned, is essential.

Renal functional capacity is usually ascertained in one of two ways: first, by tests of excretory capacity through the quantitative determination of various substances in the urine—dyes, methylene blue, indigocarmin, rosanilin, phenolsulphonephthalein, other chemicals—potassium iodid, lactose, sodium chlorid, urea, sugar following phloridzin and the enzyme diastase; secondly, by tests of retention through the quantitative determination of the concentration of certain substances in the blood, ions through electrical conductivity, molecules through cryoscopy, urea, incoagulable nitrogen and cholesterin.

Other tests have been proposed and advocated, but they can be absolutely discarded without loss in functional studies. On account of the approximate parallelism in the excretion of the members of the dye group, only one need be employed, and on account of its proved superiority, the phenolsulphonephthalein should be selected. Of the other excretory tests, certain ones prove of value in relation to certain types of renal disease, as will be later indicated.

Concerning the tests of retention:

The recent work of Folin and Dennis[1] indicates that the concentration of urea 0.5 gm. and of total incoagulable nitrogen 0.6 gm. per liter, heretofore considered normal, must no longer be so considered, since in sixteen strictly normal persons the highest non-protein nitrogen which they found was 26 mg. and urea nitrogen 13 mg. per 100 gm. blood. Slight nitrogen retention may apparently occur in many diseases, but in our experience in a large number of cases during the older methods

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*From the Genito-Urinary clinic of the Johns Hopkins Hospital and the Pharmacological Laboratory of the Johns Hopkins University.

1. Folin and Dennis: Jour. Biol. Chem., 1910, iv, 29.

and also Marshall's new urea method, we feel that no great prognostic significance is to be attached to concentrations less than 0.55 gm. per liter. Greater concentration than this together with a serum freezing-point lower than —0.6 are of the greatest prognostic importance. Evidences of retention reaching this degree we refer to as cumulative phenomena.

In order to make evident the peculiarities in value and limitations of these various tests it is advisable to consider them in relation to three great types of renal diseases: (1) unilateral and bilateral diseases necessitating ureteral catheterization; (2) bilateral surgical diseases secondary to obstruction in the lower urinary tract, and (3) medical diseases of the kidney.

1. In the first group it is desirable to have information in regard to three phenomena: (*a*) the total or combined renal function without ureteral catheterization; (*b*) the relative function, and (*c*) the absolute functional value of each kidney.

The phenolsulphonephthalein test is incomparable so far as total function is concerned and gives information frequently unavailable from any other source. In cases in which leakage and inhibition are absent, it furnishes in itself all of the necessary information in regard to the function of each kidney. In cases in which its excretion is markedly decreased, one or another of the retention tests should be employed.

The employment of functional tests in association with urethral catheterization is attended with two great difficulties which in certain cases make it impossible always to obtain all desirable information from any one test, namely, inhibition of function and leakage around the ureteral catheter.

Any discrepancy due to inhibition can be detected readily through the determination by phenolsulphonephthalein of total renal function without ureteral catheterization. Unfortunately the inhibition is not always equal on each side and one under such conditions is not justified in accepting the phenolsulphonephthalein or total urea from each side as the true index of the relative value of the two kidneys. In this connection, diastase and urea percentage, together with a difference in the intensity of urinary pigment and a consideration of the total phenolsulphonephthalein, are of value. Indeed, it is in this connection that urea percentage finds its greatest usefulness.

In order to obtain an accurate quantitative estimation of the function of each side it is necessary to secure complete collection of the urine. By the use of Albarran's fluted-end catheter this is usually possible. In a certain proportion of cases, especially in patients with relaxed ureters, leakage does occur and sometimes in amounts sufficient to nullify the findings. Unless one repeats the catheterization, which is not always practicable, using the Garceau catheter on one side with transvesical collection on the other, knowledge of the relative functional values must be largely obtained from urea percentage, diastase and time of appearance of the phenolsulphonephthalein.

The peculiar value of urea percentage and diastase can be briefly stated. When inhibition occurs, the urea percentage and diastase have equal significance, but when secretion is free and leakage occurs, diastase is more reliable since it is not so readily affected through dilution. Phloridzin has proved of comparatively little value in our experience and adds practically nothing to the information obtainable from the other tests.

2. In the bilateral surgical diseases secondary to obstruction in the lower urinary tract, information concerning the total function alone is necessary. So far as execretory function is concerned only the phenolsulphonephthalein test is necessary. It is capable of differentiating between those cases with severe renal damage and those in which the involvement is slight. It is further capable of demonstrating a marked improvement in the renal condition following appropriate preliminary treatment and enables the surgeon to determine the cases suitable or unsuitable for operation and to select the most favorable time for surgical intervention. The urine output, urea and total solids may be practically normal, and yet the patient may be on the verge of renal failure which will certainly be precipitated by a radical surgical interference.

Other tests, most of them of recent introduction, have likewise proved of but little value. Lactose fails to appear at all in the majority of these cases, in this respect, closely resembling the absence of glycosuria following the administration of phloridzin. From either of these tests an exaggerated idea of the functional derangement is almost invariably conveyed.

Diastase usually indicates decreased function when it exists, but is not a reliable index to the extent of the functional injury. It yields no additional information and consumes more time than a phenolsulphonephthalein test and hence can be discarded.

In this group of cases, tests of retention are of great importance and one of them at least should be employed in every instance in which the phenolsulphonephthalein excretion is low. They all carry about equal significance, although the parallelism of the findings has not been sufficiently investigated. Urea and total incoagulable nitrogen parallel each other, so that only one need be employed, preferably urea determined by Marshall's method. It would seem probable that the blood-urea will furnish earlier evidence than cryoscopy. There have been three cases in our studies in which a high urea blood-content was present with a normal or practically normal freezing-point. In all three, clinical and other functional studies indicated severe renal damage. In one of these cases, with evidence of rapidly decreasing renal function, the freezing-point subsequently decreased proportionately, but the first indication of cumulative phenomena was furnished by the urea.

3. Studies of renal function in medical cases fall into two great groups: (*a*) those attempting to differentiate between tubular and glomerular involvement, and (*b*) those attempting to determine total function.

The glomerular function, according to Schlayer, is indicated by the excretion of water and lactose and that of the tubules by salt and potassium iodid. Lactose and potassium iodid both being substances foreign to the body and hence not so easily influenced by extrarenal factors, were considered to be more reliable indices than water and salt.

Schlayer and his co-workers, from their studies with lactose, water, salt and iodid tests, have attempted to divide nephritis from a purely functional point of view into four groups, namely, purely vascular, vasculotubular, tubulovascular and purely tubular. This classification has not been adopted by us for the following reasons: The evidence to be found in the literature for the assumption that lactose is chiefly excreted through the glomeruli is not convincing, and experiments carried out on the frog's kidney have demonstrated beyond doubt that the tubules are capable of excreting lactose. Our studies have led us to the conclusion that the potassium iodid test as used by Schlayer, in which he has placed greatest confidence for indicating tubular functional

capacity, is unreliable. We have not encountered any cases of pure tubular nephritis. When both systems are involved, we do not feel that the tests can determine whether the tubular or vascular injury is preponderant. Mild passive congestion alone in many instances produces the same functional picture which Schlayer describes as characteristic of vascular nephritis. Consequently, a combined functional and clinical study is essential in order to differentiate two functionally similar but clinically different conditions.

At present so little is positively known or proved concerning the specific function of any individual part of the kidney that any attempt of the kind mentioned to divide nephritis is premature. Fundamental work in the physiology, involved in the secretion of substances by specific parts of the kidney, rather than the building up of a clinical superstructure on a questionable physiologic foundation, is more likely in our opinion to lead to a deeper insight into nephritis.

TOTAL RENAL FUNCTION

Doubt no longer exists concerning the ability of tests to reveal the total functional value of the kidneys. After attempting to correlate clinical and pathologic findings with the results of functional tests as simply and comprehensively as possible, the medical cases have been divided as follows: (1) cases clinically suspected of nephritis, but exhibiting practically normal renal function; (2) mild cases of nephritis without cardiac decompensation; (3) advanced nephritis without cardiac decompensation; (4) cardiorenal cases, and (5) chronic passive congestion in cardiac cases unassociated with nephritis.

In the first group, all of the tests showing a normal function, reconsideration of diagnosis becomes necessary. In cases of mild nephritis without cardiac decompensation, a normal or practically normal phenolsulphonephthalein is sometimes encountered, together with a delayed lactose excretion. These cases Schlayer would consider as a vascular type of nephritis on account of the delayed lactose excretion and the presence at times of a vascular hyposthenuria, as indicated by the study of salt and water metabolism. An identical functional picture as regards phenolsulphonephthalein and lactose may, however, be encountered in mild passive congestion of the kidneys. The lactose test may be accepted as an index of vascular disturbance, but a decreased lactose does not necessarily mean a glomerular nephritis. With a normal phenolsulphonephthalein output, tests of retention are not necessary.

In cases of advanced nephritis, the phenolsulphonephthalein is decreased, according to the severity of the lesion. Lactose is invariably delayed in this group of cases and its total suppression is of considerable prognostic significance, in contrast to its lack of prognostic value in obstruction in the lower urinary tract.

The salt test should be utilized in all severe cases, whether edema be present or not, in order to determine the capacity of the kidney to excrete salt as well as the effect on the quantity and concentration of the urine, but it should be used cautiously. The total diastatic content of the urine is usually decreased, but the extent of its decrease is not always proportional to the amount of functional injury. In all cases of severe nephritis, one or more of the tests of retention should be employed, their findings, together with the phenolsulphonephthalein, being depended on for prognostic indications. Cumulative phenomena are frequently encountered and, when present, add to the seriousness of the prognosis.

In cardiorenal cases combined functional and clinical studies are necessary in order to determine the relative responsibility of the heart and of the kidneys for the existence of the symptom-complex. Repetition of the tests is almost invariably necessary. In the presence of severe clinical symptoms, the finding of a good phenolsulphonephthalein output, along with the absence of cumulative phenomena, point to the heart as the responsible factor.

Low phenolsulphonephthalein output, together with cumulative phenomena, indicates a severe lesion of heart or kidneys, or both, and in any instance a serious prognosis. A low output of phenolsulphonephthalein, persisting after marked improvement in the cardiac condition, indicates serious renal disease.

In broken compensation, unassociated with nephritis, lactose is always delayed, perhaps markedly. Diastase content of the urine is low. The phenolsulphonephthalein, except in the severest types of congestion, is surprisingly good, while cumulative phenomena are practically never encountered. In cases in which the phenolsulphonephthalein output is low, with the first indication of cardiac improvement it immediately rises.

By means of these various functional tests, together with clinical studies, it is possible to obtain a much clearer conception of the renal condition than from clinical studies alone.

In severe renal or cardiorenal disease, associated or not with edema, the application of the salt test is of great importance.

It has been found that there is an exceptional type of case showing edema, albumin and casts, in which the general function is normal except for salt; indeed, a hyperpermeability may exist for other substances, the salt alone being delayed in its excretion.

The results of the test supply indications as to the amount of salt advisable in any individual case.

UREMIA

Uremia is a clinical condition, a syndrome, resulting from renal insufficiency from any cause. Its appearance is often sudden and unexpected; its course, acute and severe, rapidly ending in death; or chronic, lasting through months. Through functional studies, it is possible to ascertain that it is impending, even when no indications whatever of its proximity are revealed by the clinical study. With a continued failure on the part of the kidney to excrete phenolsulphonephthalein, lactose, etc., associated with the continuous, marked and increasing accumulation of urea or total incoagulable nitrogen or low serum freezing-point, one is perfectly safe in predicting the early appearance of uremia regardless of the underlying pathologic condition.

It must be remembered, in interpreting results of functional studies, that identical functional pictures carry very different prognostic significance in different clinical and pathologic associations. Extremely low functional capacity in chronic nephritis means death, whereas in obstruction in the lower urinary tract with urinary retention and back pressure the injury may be mostly functional or temporary, so that following appropriate treatment a fair or good capacity is again established.

Functional studies always find their greatest value when associated with careful clinical studies and, when properly employed, yield most valuable information from the point of view of diagnosis and prognosis and in the selection of the lines of treatment.

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ABSTRACT OF DISCUSSION

DR. LOUIS E. SCHMIDT, Chicago: The only way we are going to come to any conclusions as to functional tests is by means of this comparative work of the kind which Dr. Geraghty has done. Simply to follow out the estimation with phenolsulphonephthalein is not sufficient.

DR. W. F. BRAASCH, Rochester, Minn.: In my opinion, phenolsulphophthalein is the best renal functional test that we have at present. The practical value of renal functional tests, however, at least as applied to surgical conditions in the urinary tract, has not as yet been definitely determined. It is remarkable how often we see patients with prostatic obstruction who have a low phthalein excretion, even less than 15 per cent., go through an operation much better than patients with a high functional output. In fact, I do not recall ever seeing a case in which physical examination and clinical symptoms did not prove to be of greater value in determining whether or not a patient should be operated on than any laboratory estimate of renal functional capacity.

The same criticism may be made of the application of renal functional tests in the comparative estimation of the function of either kidney. With a diseased kidney on one side, a low functional estimate in the other kidney would tell us only what the functional activity of that kidney was at the time of examination, but not what it is capable of doing under corrected conditions. If the question arises, however, as to whether disease is present in one of the kidneys and if we employ the phthalein or any other functional test and get a marked diminution in the secretion from one kidney, we have evidence that disease exists in that kidney; but, if we do not get a decreased secretion, we have no positive evidence that disease does not exist. While I believe that the phthalein test is probably the best of our present functional tests, it, in common with any laboratory functional estimate, is very limited in its practical application.

DR. JOHN R. CAULK, St. Louis: Just one word with reference to what Dr. Braasch has said about the patient with a low output doing as well or better than those who have a high output. That, I think, is not the point. The main consideration is whether this low output is constant or not. Whether or not a man with a low output will retain it at a constant ratio under various treatment tests is a most important factor. We see persons with obstruction of the lower urinary tract, with delay in the time of appearance and marked deficiency in the total output of urine who will undoubtedly stand a prostatectomy; but we find that the output is constant. It is most important that these men have repeated tests to determine whether or not they can stand various procedures without fluctuation.

DR. H. D. FURNISS, New York: I should like to call attention to the possibility of error due to retention of the drug in these tests. I had a patient in whom the elimination of phthalein was 15 per cent. in two hours after intravenous injection; later it was 5 and again 8 per cent. In that same patient we used the lactose test and the potassium iodid test. In four hours there was cessation of excretion of lactose. That was regarded as normal. At the end of forty hours the patient ceased to excrete iodid. In all these cases a quantitative determination should be made. I think that in this case some of the lactose was retained, even though excretion had ceased. Unless we make a quantitative test we have no way to determine this. That patient had a double decapsulation, and in one week the phthalein came up to normal and has remained at that point.

DR. GRANVILLE MACGOWAN, Los Angeles: Clinical experience clearly indicates to me that it is not in cases of good surgical risks that color tests are valuable but rather in doubtful cases. If you inject either indigo-carmin into a man's muscles, or phthalein into the muscles or veins, and, after a reasonable time, do not get a good show of color in the urine—a strong blue color for the carmin, in fifteen minutes, or a full rose color, within ten minutes, for the phthalein, if injected into a vein, there is something wrong with the output efficiency of one or the other kidney or of both kidneys. Almost invariably these patients will be found to have a continuous lowered output of urea and it will require well-directed effort to improve this fault, for days, weeks or perhaps months before serious surgical interference is resorted to.

DR. HUGH H. YOUNG, Baltimore: Those of us who have been particularly interested in the development of the phthalein test ought to explain that we feel that there is no fixed percentage that will indicate that one person is a good operative risk and another is not. There are cases which show a delayed appearance and a low percentage which are good operative risks, but these patients should be under observation for two or three weeks to determine that.

The idea that Dr. Caulk has brought out as to stability is correct. The patient has been living in the condition in which he would be after operation, and his condition is found to be stable (although the kidneys are impaired). We find quite a few patients with enlarged prostate and with low phthalein output, who remain without any symptoms of uremia. Their kidney function remains low under drainage treatment, but these patients are able to eat and go about and are quite comfortable. In these cases we feel that the condition present is a chronic nephritis and that the whole organism has buttressed itself against it and the patient will make a good recovery from the operation. It is those patients with chronic retention who have not been catheterized, and who have dilated ureters and dilated renal pelves, with low phthalein and high residual, on whom it is dangerous to operate at once. This is shown in the next few days by the rapid development of uremia after catheterization, or there will be a marked improvement, and within a few weeks the phthalein output will often be five times as good as when the first test was made, and prostatectomy is followed by no uremic symptoms. We had a case recently in which there was no phthalein excreted during four hours, and after that only a trace. That patient, after urethral-catheter drainage for five weeks, had a phthalein appearance after thirty minutes and 10 per cent. output in one hour. While he did not improve in two weeks, his condition remained stable, and he stood the operation well. You cannot give any absolutely fixed rules about this and your clinical judgment is an important deciding factor. The phthalein ought to put you on your guard and confirm your clinical observation.

DR. H. D. FURNISS, New York: I do not think that the failure of indigo-carmin to appear in fifteen minutes ought to be considered as an absolute indication of renal insufficiency. I had one case in which, after nineteen minutes, there was absolutely no elimination after intramuscular injection. After intravenous injection this patient began to eliminate it at the end of two minutes. Using phenolsulphonephthalein intravenously we obtained sixty in the first fifteen minutes after injection.

DR. GRANVILLE MCGOWAN, Los Angeles: I expressed myself poorly. I meant to say that, if, after an interval of fifteen minutes, when indigo-carmin or phthalein is used, a good, deep stain is not given to the urine, one had better be on one's guard about his patient.

DR. JOHN T. GERAGHTY, Baltimore: I should like to say in answer to Dr. Braasch that the determination of the renal function before any operation is valuable only in so far as it is of advantage to know anything about the renal function. If it is not necessary to know anything about the renal function, there is no necessity of doing functional tests. If, however, functional estimations give some information, and if they are of value in occasional cases, then they should be employed whenever careful work is attempted. Not infrequently information is secured in this way which can be obtained in no other manner. In double renal tuberculosis, it is not always possible to tell from the quantity of pus that is present which is the most diseased kidney. I have seen the more recently involved kidney secrete more pus than the more diseased one. A functional estimation will quickly and accurately give information regarding which is the better kidney and indicate accurately the amount of disease in each kidney. Again, functional estimations are useful in differentiating pyelitis from pyelonephritis, as in pyelitis the function is but little decreased, while in pyelonephritis the function may be seriously interfered with. From a study of the urine alone, it may not be possible to make this differentia-

tion. This information is of value from the point of view of prognosis and treatment of cases of chronic pyelitis and pyelonephritis. If the infection is a pure pyelitis, pelvic lavage usually gives brilliant results, while in pyelonephritis the results of pelvic lavage are of only comparatively slight value. There is another class of cases whose recognition is absolutely impossible without the employment of functional tests. I refer to the infantile kidney. The urine secreted by these kidneys may be perfectly normal, but is small in amount and the presence of such an anomaly can be suspected only when functional estimations are made. Recently, we had a very striking instance of this in which a tuberculosis was present in the large, hypertrophied kidney. The function of this tuberculous kidney was six times that of the other kidney, the urine from which was perfectly normal in every respect, except that it was small in amount. These cases are probably not uncommon and it will be impossible to check them up in any other way than by a functional estimation. In the early cases of renal tuberculosis, if the disease is limited to a small area in the kidney, functional estimation may show little disturbance because there is little disturbance of function present.

One has only to glance at the literature to realize the growing interest of the medical profession in the subject of renal function and the practical unanimity of opinion regarding the value to be derived from functional studies.

THE PUBLIC HEALTH ASPECTS OF LEPROSY IN THE UNITED STATES *

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On account of the communicability of leprosy and its mutilating effects on individuals affected, the presence of the disease in any community is a matter for concern. Leprosy is known to exist in many states and in all of our island possessions. By reason of this prevalence and the enormous volume of traffic carried on between the United States and other countries, the control of the disease becomes a problem of national importance.

PAST PREVALENCE

The infection was undoubtedly introduced into the United States from abroad, but the time of its introduction is problematical. Cases were undoubtedly imported into the Gulf States by maritime routes. The disease gained access to Pacific Coast ports through Chinese immigration, and to the north central states by means of Scandinavian immigrants. In some of these sections the prevalence of the disease evidently attracted more attention many years ago than at the present time. In Louisiana, where leprosy probably had no existence 140 years ago, the number of leprous beggars in the streets of New Orleans was so large in 1786 that the authorities had to isolate them in an institution outside of the city. The introduction of the disease in these sections has resulted in its continued propagation up to the present time. Likewise, in Hawaii, where no cases were known to exist before about 1838, the introduction of the infection of leprosy was followed by its diffusion, until now the prevalence of the disease constitutes one of the great social and political problems of that territory.[1]

On account of the incompleteness of the morbidity and mortality records generally, the extent of the prevalence of leprosy in the United States in the past can not be accurately estimated. Its extent was so large, however, as to claim the attention of the authorities in New Orleans as long ago as 1786, the authorities of San Francisco in the early seventies and other states at later dates.

There is record of the occurrence of cases of leprosy from time to time in many states. Within the past fifty years the occurrence of the disease in the United States has attracted most attention in the south Atlantic states, Louisiana, the north central states and the Pacific Coast states. In 1866, the disease was recognized as having reappeared in Louisiana. In 1890, Gronvald reported the existence of sixteen cases in Minnesota, and stated that the disease had prevailed there for fifty years. He estimated the following year that about one hundred and sixty lepers in all had immigrated into Wisconsin, Iowa and Minnesota. During the ten years prior to 1883, fifty-two lepers were admitted to hospital in San Francisco.

From our more recent knowledge it appears that these sections have been foci of leprosy up to the present time. In the report on leprosy in the United States submitted by a commission of medical officers of the U. S. Marine Hospital Service the presence of 278 cases of leprosy was shown but, as stated by the commission, this did not represent a complete census. Of the 278 cases reported 145 individuals were native-born, 120 were foreign-born, and the birth-places of the remaining thirteen could not be determined. These cases were scattered through twenty-one states and territories, showing the broad distribution of the disease throughout the country. In over 73 per cent. of the cases recorded the affected persons were at large, only seventy-two being isolated and provided for by the states or cities in which they were located.

PRESENT PREVALENCE

In 1909, by means of correspondence, steps were taken to ascertain the occurrence of leprosy in the United States and its dependencies. As a result, records were obtained of 139 cases located in thirteen states and the District of Columbia, 764 in Hawaii, 17 in Porto Rico, 2,330 in the Philippine Islands and 7 in the Canal Zone. These cases, however, were only those "officially recognized," and it was regarded as altogether probable that many cases had not been included in the compilation.

In studying the regional distribution of the disease, four zones of infection could be distinguished, viz., the Atlantic seaboard, the Gulf Coast, the Pacific Coast and the north central states. In the Gulf Coast zone three foci of infection were recognized as being active. On the Atlantic and Pacific coasts a variable number of cases were occurring, and in the north central portion of the country the disease appeared to be decreasing.

By means of correspondence last year (1912), steps were again taken to ascertain the number of officially recognized lepers in the United States and its dependencies. This inquiry referred especially to the number of new cases reported during the calendar year 1911 and to the number existing Jan. 1, 1912. As a result, a total of 146 cases was reported in the continental United States, forty-one of these individuals having been apprehended during the calendar year 1911.

The total number reported necessarily represented only a portion of the cases occurring, as in many states the disease is not notifiable, and in others, the requirement of notification is difficult of enforcement.

Leprosy has been specifically made a notifiable disease in the following eighteen states and the District of

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* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

1. New York Med. Jour., March 24, 1888, p. 322.

Columbia: Alabama, California, Connecticut, Florida, Idaho, Illinois, Indiana, Iowa, Massachusetts, Nebraska, New Jersey, New York, Oregon, Pennsylvania, South Carolina, Utah, Washington and Wisconsin. At that time the disease was also notifiable in Hawaii, Porto Rico and the Philippine Islands, and on the date mentioned there were reported in these jurisdictions respectively, 696, 28 and 2,754 cases, making a grand total of 3,624 officially reported cases in the United States and its possessions.

In Michigan, a regulation of the State Board of Health specifies that cases of leprosy shall be reported for statistical purposes. In certain other states the laws require that cases of all infectious or contagious diseases shall be reported, and among these leprosy would naturally be included. In the absence of a statement of the diseases that shall be construed to be infectious or contagious, however, it would appear to be left to the personal opinion of each practicing physician as to which diseases came properly under a classification, and were, therefore, notifiable. Under these conditions it could only be expected that the reports would be incomplete.

Although the number of cases of leprosy reported by the state authorities as present Jan. 1, 1912, was only 146, whereas, the commission above referred to found 278 in 1901, it cannot properly be inferred that there is a lessened prevalence of the disease. The 146 cases reported as present the first of last year were, with one or two exceptions, isolated and under the control of state or local authorities. These 146 cases are, therefore, probably comparable with the seventy-two cases reported in 1901 as isolated and provided for by states or cities.

From this brief summary, it is evident that leprosy is widely distributed in the United States, and, while the total number of cases recorded is trivial in relation to a total population of over 90,000,000, a public health problem of national importance presents by reason of such distribution, and the numerous possible foci of infection that exist.

FEDERAL MEASURES IN RESPECT TO LEPROSY

On account of the loathsome, contagious character of leprosy, the helplessness of persons so afflicted, and the public dread of its introduction and spread in the United States, the disease has been made the subject of consideration and certain official actions by the federal government for many years. The first object was to prevent the introduction of the disease, and on Dec. 23, 1889, a regulation was issued by the Secretary of the Treasury forbidding the entry of any vessel to any port of the United States without a certificate from the proper officer that no case of leprosy was found on board said vessel, or in case one had been found, that it had been removed from the vessel and detained at the quarantine station. This regulation provided that lepers so apprehended should be permitted to depart on outgoing vessels bound to the foreign country from which the leper last sailed.

Although this regulation was superseded by others subsequently issued, practically its provisions are in force at the present time.

In accordance with the quarantine act of Feb. 15, 1893, no alien who is a leper is allowed to embark for the United States from foreign ports; and, under this law the following special regulations have been issued for observance at domestic ports to prevent the introduction of leprosy:

129. Vessels arriving at quarantine with leprosy on board shall not be granted pratique until the leper and his baggage have been removed from the vessel to the quarantine station.

130. No alien leper shall be landed.

131. If the leper is an alien passenger and the vessel is from a foreign port, action will be taken as provided by the immigration laws and regulations of the United States. And to this end the case shall be certified as a leper and reported to the nearest commissioner of immigration.

132. If the leper is an alien and a member of the crew and the vessel is from a foreign port, said leper shall be detained at the quarantine at the vessel's expense until taken aboard the same vessel when outward bound. Such case of leprosy should be promptly reported to the collector of customs at the port of arrival of the vessel, and the collector shall exact a bond from the vessel for the reshipment of the said alien leper on the departure of the vessel.

The immigration laws forbid the landing of immigrants afflicted with loathsome, contagious diseases, leprosy being included in this class. Adequate authority thus exists for the exclusion of leprous individuals, but on account of the long period of incubation of the disease and its extreme chronicity, the possibility of the entry of cases must be admitted.

Fortunately, however, the immigration laws provide that any alien afflicted with leprosy may be deported at any time within three years after the date of his arrival, provided the disease existed prior to landing. The federal government is thus able to exercise authority over leprous aliens for three years after their arrival, and, by deportation, to relieve the state of the burden of their care.

Under the quarantine act of Feb. 15, 1893, the federal government through the Public Health Service also exercises jurisdiction over the transportation of lepers in interstate traffic. In a regulation of June 24, 1909, issued in accordance with this law, authority was granted for the acceptance of lepers for transportation under proper supervision when *en route* to a seaport for deportation or to a designated place for care and treatment, the observance of proper sanitary precautions being required while *en route*.

In a regulation of May 15, 1912, common carriers are prohibited from accepting for transportation in interstate traffic any person afflicted with leprosy until a permit has been obtained from the Surgeon-General of the U. S. Public Health Service describing the restrictions that shall be observed. This regulation which was issued by the Secretary of the Treasury also prohibits lepers from accepting transportation in interstate traffic until the permits above mentioned have been obtained, and unless such lepers shall have agreed in writing to comply with the restrictions specified. The regulation further provides that lepers who have left the state where they reside may be detained and returned to such state, or removed to such federal quarantine station as the Secretary of the Treasury may designate, the conveyance occupied by them during such removal to be closed after being vacated, and disinfected.

From the foregoing it will be seen that control has been exercised to prevent the introduction and spread of leprosy. The leprosy problem, however, relates more particularly to the care and segregation of the cases that are discovered from time to time in different parts of the country, and who are in reality under the jurisdiction of the state authorities.

As previously stated, efforts were made in 1901, 1909 and 1912, to determine the number of such cases. These investigations and the hardships experienced by lepers on account of the morbid dread of the disease on the part of the public generally, have emphasized the need of a rational and humane method of care of persons so afflicted.

In his annual report of 1891, the Surgeon-General of the Public Health Service advocated a national leper hospital to be maintained by the federal government for the care of these unfortunates. The circumstances giving rise to the need of such an institution were strikingly set forth by the president of the Pennsylvania State Board of Health as long ago as 1890 in the following words:

> It is the consensus of opinion that persons suffering from leprosy, on account of its peculiar nature, its chronic character, and the abhorrence with which the public view it, should be removed from society and humanely cared for and treated in places especially set apart for this object. It is impracticable for towns or cities, or even states to provide such places, on account of the expense, the number of cases not being large enough to warrant the necessary expenditure. And what is finally to be done with the lepers that are now ill provided for, and those that will be discovered in the future? They cannot be treated in general hospitals except for a very limited time. It is difficult to return them to their native countries, though most of them are unnaturalized foreigners. Where there are hospitals for contagious diseases (and few places have such hospitals) temporary provision might be made for them. Here they must necessarily be secluded in unfrequented apartments, denied intercourse with relatives and friends, shut out from the world, denied the freedom of outdoor exercise because of the popular aversion to the disease, and doomed to a life of suffering, and, what is worse, of mental anguish over their deserted and hopeless state. What is to become of lepers who may happen to be discovered in places which have not even such inadequate means for detention?

Practically the same situation and the questions arising from it exist to-day. Federal, state and municipal health authorities have for years urged the establishment of a national leper home. In 1905, a bill was introduced into both houses of congress to provide for such an institution for the segregation and care of lepers by the U. S. Public Health Service. The bill was passed by the Senate and favorably reported by the House Committee on Interstate and Foreign Commerce, but failed of passage in the house, presumably because of the fears of certain members that the institution might be located in their state.

Objections have arisen to the care of lepers even at federal quarantine stations, and officials have demanded the removal of cases to some other place outside of their state.

The reasons which prevented legislation and which demand removal of lepers as above mentioned will be powerful factors in the postponement of provisions for the federal care of lepers. Nevertheless, humane segregation is necessary, and ultimately will have to be provided if the states are to be relieved of a burden, and the extension of the disease prevented. In the meantime the Public Health Service is studying leprosy with the hope of evolving methods of prevention and cure, and the states and territories will necessarily provide such care and treatment as is possible.

INVESTIGATIONS OF LEPROSY

By an act of March 3, 1905, Congress provided for the investigation of leprosy with special reference to the care and treatment of lepers in Hawaii. In accordance with this provision, a leprosy investigation station was established on the island of Molokai, and a branch station located in connection with the Leper Receiving Station at Honolulu. The bacillus of leprosy has been cultivated there, and Clegg, who discovered first a method of growing the organism, is now there studying the products of the organism and its influence on man and the lower animals. Epidemiologic and clinical studies are also being carried on, and these investigations will be continued until definite results are obtained.

The work is in charge of Dr. G. W. McCoy of the Public Health Service.

STATE PROVISIONS AGAINST LEPROSY

The leprosy problem has been as difficult for the states and territories as for the federal government. The disease is mentioned in the laws of eight states, the District of Columbia, Hawaii and Porto Rico, and the regulations of the state boards of health of sixteen states. In practically all reporting and segregation of cases is required, but there is considerable difference in the methods employed.

In Minnesota, self-isolation in the home is required. In Louisiana, on the other hand, every known leper is required to become an inmate of the leper home located in Iberville Parish. Massachusetts maintains a leper colony on Penikese Island, and the city and county of San Francisco maintains a leper hospital on the outskirts of that city. In other states in which lepers are domiciled quarantine is maintained either by state or local authority. In Hawaii, Porto Rico and the Philippine Islands leper colonies are maintained, and segregation is more or less effectively enforced.

In Texas, $40,000 was set aside in 1909 for the erection and maintenance of a leper home, but on account of opposition of localities to its erection, nothing has been done. This is a striking example of the aversion on the part of the public to lepers and the difficulty of providing for their care. In consequence of such difficulties, the occurrence of cases in some jurisdictions has been purposely ignored, while in others they have been driven or allowed to depart to some other state.

On account of the recent notoriety attending the transfer of a leper from Washington to New York, the attitude of the latter city in respect to such cases is generally known. Although its population is congested, and presumably good opportunities would be afforded for transmission, segregation is not practiced.

THE POSSIBILITY OF THE SPREAD OF LEPROSY

By some the presence of leprosy here and there in the United States is held to be of little consequence in comparison with the occurrence of other diseases, such as tuberculosis and typhoid fever. Nevertheless, it is a menace to the public health and deserves special consideration because of the possibility of the spread of the infection; the hopeless nature of the disease and the aversion of the public to persons so afflicted.

While the spread of leprosy in recent years has not been marked it must be remembered that cases of the disease have developed from time to time in American-born persons, some of whom had not been outside of the United States. Of the 278 lepers recorded in 1901 and previously referred to, 145 were American-born. By reason also of our increased world relations, and interests in the Philippine Islands and other possessions, there is greater danger than ever to fear the introduction of leprosy by returning American citizens.

Large numbers of soldiers, sailors and civil employees spend prolonged periods abroad, particularly in the Philippine Islands, where there is decided danger of contracting the infection. The disease may not manifest itself on these persons for years after their return, but new foci of the disease may thus be created.

In considering the epidemiology of leprosy, the incubation period and duration of the disease must be reckoned

in years and in decades rather than in days and months. The incubation period is prolonged, and the duration of infection extends throughout the life of the patient.

These facts taken in connection with our knowledge of the rise and fall of epidemics in the past suggests the possibility of a greater prevalence of the disease fifty or one hundred years hence, unless appropriate preventive measures are instituted and enforced.

MEASURES OF CONTROL NECESSARY

Leprosy should accordingly not be regarded as a negligible factor in public health administration, nor should it continue to be an object of unreasonable aversion on the part of the public. Education is necessary to overcome the latter. Public health officials and physicians, therefore, should systematically teach the people the nature of the disease, the extent of its contractibility and above all the humane treatment that should be accorded lepers.

Every case of leprosy should be promptly reported to the proper health authority and, wherever necessary, the laws should be so amended and penalties provided for non-observance.

All lepers should be segregated in such manner as to prevent the spread of the disease, but the necessary segregation should be enforced so as to promote the comfort and happiness of those so afflicted.

On account of the difficulty of providing these conditions in towns, counties and states where single cases of leprosy occur, and because of consequent inadequate methods of control, I believe there should be established under the Public Health Service a national leper home for the care and treatment of such cases as may be turned over by state and local health authorities for the purpose.

CLINICAL ASPECT OF LEPROSY*

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Our medical text-books tell us that we have many lepers in this state and that they are immigrants from the Scandinavian countries, particularly from Norway. Our lepers are gradually dying out and there are not enough left for clinical demonstration even if all were at hand at this meeting. A few cases will give us only a faint idea of the clinical aspect of this exceedingly varying disease with its different forms, many stages, all possible degrees, irregularities, asymmetry, complications and great variability in the final mutilations. One case is not like another and a complete clinical demonstration would mean hundreds—and we have not got them.

As everyone knows, leprosy appears in two clinically different and, when developed, sharply defined forms. In both forms, a macular cutaneous eruption is the first symptom—the initial lesion, which probably exists, having never been discovered—and in this stage it might be questionable which special form of leprosy will develop. This prodromal or eruptive stage is not seen in the leproseries, where the patients come when the disease is fully developed and recognized. People familiar with the disease in districts where it is endemic, will observe a change in the attitude of the patient, who is stupid, drowsy, feverish, depressed, disinclined to work, complaining of general malaise, pains in the limbs and soreness. The face, particularly the region of the superciliary ridge, is puffy and assumes a dusky hue, especially noticeable during changes of temperature. A dirty yellowish discoloration of the circumcorneal part of the sclera, which together with the cutaneous eruption gives the patient a melancholy, sorrowful expression, has always in leprous districts been regarded with suspicion by the people. When the cutaneous eruption is well established, it is usually easy to know which form of leprosy will develop, and this is a matter of no small importance to the sick, as in one form of the disease life is much shorter, the patients suffer much more and are less frequently, if ever, cured than in the other form.

Authorities on the subject have in vain tried to find a short, concise and descriptive name for all the different phases of the disease, but they have not even succeeded in agreeing on a universal name for the two groups or forms of leprosy. Boeck and Danielssen's "elephantiasis graecorum tuberculosa," "anesthetica" and "tuberculo-anesthetica" or "mixta" have by Hansen and Looft been supplanted by "lepra tuberosa" and "maculo-anesthetica," which at present are the official names in Norway. Bidenkap prefers "lepra tuberosa" and "lepra nervorum." In my writings I have used the names "tuberous" and "macular" leprosy. All these names are inadequate and also immaterial, if we only keep the two forms separate as clinically very different. In Norway it is customary to speak about nodular and smooth leprosy—*knudet og glat Spedalskhed*—which after all, may be good practical names. Mixed leprosy should be stricken out, as the two forms never appear simultaneously in the same person from the beginning. It is not rare that either form ultimately is transformed into or complicated with the other form; the disease never originates as mixed leprosy.

TUBEROUS LEPROSY

Tubercular or tuberous leprosy begins with an eruption, gradual or acute, of usually not very distinct, pigmented spots of variable size without perceptible infiltration. Livid in the beginning, they assume, after a while, a brownish color. In contradistinction to the spots in macular leprosy, these spots are not sharply defined, neither do they appear in exactly the same locality, although the face, the eyes, ears and the extremities are places of predilection for the eruptions in both forms. It can be laid down as a rule, to which there are few exceptions, that eruptions in the tubercular form do not attack the scalp, the trunk, the sexual apparatus, the palms of the hands and the soles of the feet.

After the stage of eruption comes gradually the stage of diffuse or nodular infiltration of the spots—the formation of lepromas, which name designates the leprous products, wherever they are, in the skin, the subcutaneous tissue, the eyes, the mucous membranes, the nerves, etc. The skin covering the lepromas becomes dense and glossy; the consistency of the lepromas is solid, the shape being usually that of a globe cut in half, sometimes oblong.

The size varies from a couple of millimeters to extensive masses, when they become confluent; the color varies from reddish, yellowish to brownish and even to black. The lepromas do not itch and are indolent except in acute eruptions. At the site of the lepromas the hair will fall out and the sudoriferous and sebaceous glands will atrophy. When the tuberous lepromas in the face are numerous, large and confluent, with fur-

* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

rows between them, we have the so-called *facies leonina* (lion face). Otherwise we find all degrees both as to extensiveness and intensity. Hansen and Looft mention that they have seen lepromas so small, discrete, few and so little characteristic, that the diagnosis had to be made by microscopic examination of an excised piece. Sometimes lepromas in the skin cannot be seen but may be felt, when they extend into the subcutaneous tissue instead of outward. Therefore, palpation of the skin is just as necessary as inspection.

The lepromas in the skin, when once developed, will for the most part remain stationary for years; they grow but little if any at all. Sooner or later, however, this slow development is interrupted by more severe outbreaks, the so-called eruptions. The eruptions, which Hansen and Looft look on as a result of auto-infection, mean an acute outbreak of new lepromas in the old as well as in new places. The general health, which heretofore has been fair, suffers under high fever, general malaise and pains; the patients stay in bed from days to months. The eruptions on the extremities have a great likeness to erythema nodosum, sometimes even to pseudo-erysipelas. The disease progresses always through eruptions in shorter or longer intervals. When the eruption fever is over, the patients pick up quickly. They never die in the attacks, but they come out more leprous than before, having at least more leprous manifestations. The number of eruptions in a patient is variable.

The lepromas may grow so luxuriously that the epidermis breaks or is cast off. The exposed surfaces cause the patients great discomfort and they seek relief in plastering up the often numerous places, which are little disposed to septic infections. Erysipelas, which was endemic during my time in the leproseries, got hold of many and carried off some of the patients.

After several years the stage of diffuse or nodular infiltration is followed by a stage of absorption or ulceration. The lepromas soften exactly in the middle of the base and the surface sinks in. Or they break open with expulsion of the softened contents and an ulcer results, which finally heals with a depressed, radiating, white or pigmented scar—the leproma is healed.

The patients usually die in this stage from complications or intercurrent diseases after an average illness of eight or nine years.

Tubercular leprosy attacks the eyes in 75 per cent. of the cases—the lids, conjunctiva, cornea, sclera, iris and ciliary body, but never the inner eye. I shall not take up space by detailing the clinical aspect of the eye affections in this form, however interesting they may be; I have described them repeatedly elsewhere. I shall only direct attention to the dirty discoloration of the sclera, often found in the beginning of the disease. This, together with a faint obscuration of the upper part of the cornea and the already mentioned dusky hue of the region of the superciliary ridge are early and sure symptoms of advancing tubercular leprosy. Blindness from invading corneal lepromas and leprous iridocyclitis is not uncommon. It is a consolation to the misery, that the advance of the corneal lepromas can be arrested for a long time by establishing a scar between the leprous and the clear cornea by performing a keratotomy. Finally, however, if not absorbed, the lepromas will transgress the scar and blind the patient.

The tubercular leprosy may also attack the mucous membranes of the nose, mouth, tongue, pharnyx and larynx. Only the anterior soft part of the nose is affected. The septum may ulcerate and the tip of the nose will sink in. The soft part of the nose may disappear entirely, leaving a cavity. The bony structures of the nose are never affected. Lepromas are often found on the mucous membranes of the lips, the mouth, the soft palate, the pharynx, epiglottis, larynx and vocal cords. Tracheotomy is not a rare operation in these cases. Many patients carry a tracheotomy tube and are not worse off for it, as they already were incurably aphonic.

The lymph-nodes are always enlarged. The swelling is indolent and never suppurating.

The peripheral nerves are always affected in this form of leprosy—not from the beginning, but always in the later course of the disease. The facial, radial, median, ulnar and peroneal nerves are always invaded. The lepromas of the nerves are palpable at places of superficial exposure; of the median nerve at the wrist, of the ulnar nerve at the inner condyle, of the peroneal nerve where it swings around the head of the fibula. Pains, intense pains, requiring relief by morphin hypodermatically, and anesthesia result from the leprous neuritis. Anesthesia is not so marked as in the maculo-anesthetic form, but can usually be easily demonstrated in the peripheral parts with the advancing disease.

The tubercular leprosy also attacks the testicles, the liver and the spleen. These affections have only pathologic interest, however, and are of no clinical significance whatsoever.

A tubercular leper rarely, if ever, recovers; it happens oftener, if he survives the different stages and all lepromas have disappeared, leaving scars and other deformities, that he turns into a pure anesthetic leper with mutilations as the final stage of the disease. The lepromas of the nerves are the last ones to disappear and if they do ever disappear, the vitality of the nerve itself has disappeared with them but, fortunately, never completely.

The clinical aspect of this form of leprosy is too characteristic for diagnostic errors. If ever in doubt, examine for lepra bacilli, which is easy, as they are always present and in great numbers in all lepromas. No other disease should ever be confounded with tubercular leprosy.

MACULO-ANESTHETIC LEPROSY

It seems strange that the same germs in the same locality can produce two distinctly different forms of leprosy, the one having no external resemblance whatsoever to the other. Lie, Hansen's successor in Norway, intimates that the difference between the tubercular and maculo-anesthetic forms consists in a greater wealth of lepra bacilli in the first and a greater reaction to the few bacilli in the last form. The result is that the erythematous eruptions in the first form go on to lepromatous infiltrations, while the erythematous eruptions in the second form gradually fade away. In the nervous system, the difference is not so conspicuous, but the proportionately few bacilli here, the complete disappearance of the bacilli in some cases, the intense neuralgias and the deposits of lime salts in the nerves are indicative of the same condition here as in the skin; fewer bacilli and greater reaction.

The initial lesion, if such exists, has not yet been found. There are indications that the mucous membranes of the nose where lepra bacilli often are found in the secretions, might at least be one of the places where the bacilli get entrance to the system through inoculation in nose-picking or otherwise. But, to quote Hansen: "the greater the ignorance, the livelier the imagination."

Although there are a few cases on record in which no cutaneous eruptions ever were observed, the claim is general that maculo-anesthetic leprosy is always ushered in with an eruption of isolated, erythematous spots which, in contradistinction to the tubercular form, may be found in any locality with the exception of the scalp—on the face, on the cornea, along the course of the spinal nerves. The maculae are of different sizes, from 2 to 3 cm. in diameter to much larger. They are reddish at first, become more and more pigmented and after a while are yellowish to brownish. Their form can be round, oblong, irregular or annular; their margins are sharply defined; they are either flush with the skin or plainly elevated, sometimes desquamating and always hyperesthetic to begin with, anesthesia being a later symptom. The maculae may spread, become confluent and form landscape-like figures. A rather symmetrical distribution is the rule, from which there are many exceptions. The maculae will last from a few days, even less, to several months. They fade from the center toward the periphery, leaving for a time annular forms; they can disappear entirely without leaving perceptible marks or they can leave behind more or less anatomic changes, demonstrable so long as the patient lives; in some cases the skin may become entirely atrophic, transparent, and thin as a cigarette paper. New eruptions may follow at later periods either in the old or in new places.

Swelling of the lymph-nodes is usually present and will remain long after the eruptions have disappeared.

With gradual disappearance of the cutaneous eruptions the leprous neuritis, which progresses from the superficial nerves of the maculae toward the center and later as degenerative neuritis toward the periphery where there never was any eruption, will predominate in the clinical aspect. Maculous leprosy gives way to anesthetic leprosy and the anesthesia is the key to the situation.

Lie, who has made extensive and excellent studies of the leprosy in the spinal cord and the peripheral nerves, finds that leprous polyneuritis is of two kinds; the neuritis of the peripheral parts of the nerves is at a certain stage of the disease due to the presence of lepra bacilli, while the neuritis in the most central parts of the nerves, where no bacilli could be found, must be of secondary, degenerative nature, resulting from the influence of the lepra bacilli on the peripheral nerve-ends. When the bacilli first have invaded the nerves, the leprous process proceeds with more or less rapidity toward the central nervous system. The advance of the bacilli stops as a rule about the middle of the arm in the ulnar nerve; still more peripherally in the median and radial nerves and in the middle of the thigh in the sciatic nerve. On this leprous stretch the nerves are thickened and can be felt, where they are superficial, particularly at the inner condyle of the humerus and at the head of the fibula.

Lie found the changes in the more central parts of the nerves where bacilli never were found, less pronounced than in the peripheral parts, but always in proportion. The degenerative changes were characteristic by the absence of that hypertrophied connective tissue, which accompanies the lepra bacilli and by the presence of very thin nerve-fibers, which he considers atrophic, the nerve trunks becoming thinner than normal as a result. These degenerative changes can be traced clear to the roots on one side and to the periphery on the other side—descending degeneration along the nerves, which were not invaded by the lepra bacilli. The anterior roots were, however, undoubtedly less affected than the posterior.

Lie found the spinal ganglia seldom normal. He found hyper-pigmentation in the ganglion cells; the nuclei had often disappeared and the protoplasm presented different degrees of tigrolysis and pyknosis. Bacilli were found in nearly all the tubercular cases and in a great number of the anesthetic, partly in normally appearing ganglion cells, partly in degenerated ones. Lepra bacilli were rarely found in the tissue outside the ganglion cells.

In the gray substance of the spinal cord Lie found changes analogous to those in the spinal ganglia, only less pronounced and with fewer bacilli. The most constant changes were found in the white substance, particularly in the dorsal columns and the posterior roots, whereas the spinal cord seems to be a less favorable bacilli.

He also found bacilli in the central nervous system in all cases where he found them in the periphery. He considers the central nervous system a place of predilection for the bacilli, particularly the spinal ganglia, whereas the spinal cord seems to be less favorable domicile.

The leprous and degenerative changes in the spinal cord do not, as heretofore believed, belong to the anesthetic form of leprosy alone; they appear in all somewhat older forms—even typically tubercular—when the peripheral neuritis has reached such an advanced stage, that we can demonstate anesthesia and atrophy in the periphery.

CLINICAL ASPECT OF NERVE LEPROSY

The patients are more or less tortured by neuralgias, generally present in the extremities and usually of sufficient severity to justify hypodermic relief. We had in my time many morphin habitués.

Anesthesia is a constant and the most characteristic symptom. It may proceed to complete loss of the tactile and thermal sense. Anesthetic areas are generally found on the forearms and hands, on the legs and feet, on the trunk and on the face and eyes. They are usually demonstrable at the site of the eruptions, but will also be present in parts supplied with degenerated nerves.

Vesiculation or pemphigus eruption is characteristic for this form of leprosy, but is absent in the tubercular form. Vesicles are sometimes present in the beginning of the disease simultaneously with the cutaneous eruption; ordinarily they appear when the anesthesia is well developed. Vesiculation is considered a trophoneurotic symptom. It is to my mind questionable if vesiculation is not often the result of traumatism, such as exposure to protracted pressure or intense heat the patient not being able to control either because of the loss of sensation. Whatever may be the cause, vesiculation often comes on suddenly; the patient wakes up with one or more bullae. The contents of these bullae are serous and devoid of lepra bacilli. They usually burst soon and the places heal with first, a pigmented, later white scar. Sometimes septic infection sets in, deep ulcerations following. This is particularly seen on the hand and under the ball of the foot (*mal perforant de pied*).

Acute rheumatic affections of the joints, not seldom observed, are also regarded in the light of trophic disturbances, although they may be explained as metastatic affections. The joint affections belong to the earlier stages of the disease, appear mostly simultaneously with the maculous eruptions and disappear with

them. They may repeat themselves and leave some stiffening of the joints.

Other trophic disturbances in advanced cases are edematous, pale glossy, slightly desquamating, atrophic skin (white leprosy) devoid of hair, sudoriferous and sebaceous glands; in old cases, hyperkeratosis has been observed, usually symmetrical, on the anterior aspect of the crura, on the backs of the hands and the soles of the feet. Malformations of the nails, which become either thickened or brittle, fissured or thinned and decreased in size, are also trophic manifestations.

Atrophy of the subcutaneous tissues, the muscles and the bones are constant manifestations and are looked on as trophic disturbances. The muscular atrophy might, however, result from inactivity due to progressive muscular paresis. This muscular paresis and atrophy run parallel with the progressive anesthesia.

In the stage of resorption, which after many years follows the stage of eruption and leprous neuritis, the disease may clear up and a practical cure be effected with more or less complete return of sensory and muscular activity, but sclerosis of the nerves is the usual result, after all the leprous products, including the bacilli themselves, have disappeared, and permanent anesthesia with all its sad, often extremely pathetic consequences, will follow. The leprosy is cured, but the cure is dearly bought on account of many horrible mutilations such a cure so often brings. This is the final stage in many cases—the stage of mutilations (lepra mutilans), which might cover many years, until complications or intercurrent diseases end the miserable existence.

The facial and trigeminal nerves are almost constantly affected but seldom to the same degree. Paresis and atrophy of the muscles of the face and anesthesia of the eyes will produce a very characteristic clinical picture. The face loses its expression and mimic, winking becomes more seldom and the look is sorrowful. It may happen that the masseters become so lame and atrophic, that the lower jaw sinks and has to be held up artificially. Paresis of the orbicularis oris causes ectropion of the lower lip, with difficulty or even impossibility of closing the mouth, while the saliva constantly dribbles away. Paresis of the ocular orbicular muscles makes insufficient closure of the lids; paralytic ectropion of the lower lids with eversion of the puncta will result and cause epiphora and xerosis of the lower part of the cornea with ulceration, perforation and its further consequences unless remedied by medial tarsorrhaphy, an operation which has saved many eyes and is consequently very popular.

The motor nerves of the eyeballs are probably sometimes also affected, as the excursions of the globe might be more and more limited and even go on to complete paralysis—the bulb standing perfectly still in the middle of the orbit.

The ocular affections in anesthetic leprosy I have repeatedly described in papers and dissertations in Norwegian when engaged in the leproseries. I think I have proved to universal satisfaction, that the above-named affection in the lower part of the cornea is entirely due to xerosis and not at all to neuroparalysis.

The anesthetic eyes stand operations of magnitude as iridectomies, cataract operations and tarsorrhaphies just as well as normal eyes and artificial anesthesia is superfluous. Xerosis of the cornea may take in the entire surface and destroy the eyesight; it may also be complicated with a real leproma and followed by lepromas elsewhere.

As to the extremities, the anesthesia, paresis and atrophy will lead to most characteristic pictures. Atrophy of the interosseal muscles will make the interosseal spaces show up as furrows. The muscles of the thenar and hypothenar eminences waste away with disappearance of the natural roundness of these parts. Gradually most of the muscles of the hands will atrophy, then those of the forearms, and, lastly, even some of the arm. The corresponding muscles of the lower limbs undergo the same atrophy. The muscular paresis, however, never becomes complete. The lepers can always make good use of their hands and feet and do astonishingly clever work with their crippled extremities. They can sew, knit, spin, make nets, shoes, brushes, combs and do blacksmithing and carpenter work. And they sell their products without any ill results to their customers. Their walk is characteristic; they lift their legs with effort because of the muscular weakness.

Gradually the real mutilations appear. Contractures of the hands and feet develop. The hands become claw-like (*main en griffe*). The first phalanges are dorsally and the rest of the fingers volarly flexed. This malformation is also present in the feet, but generally to a lesser degree. But these are not all the mutilations to which these lepers are subjected. With the progressive anesthesia follow frequent and almost unavoidable exposures to injuries, infections, and ulcerations. They bruise, cut, burn or squeeze their hands or fingers very frequently; they stand on their feet so long that the circulation under the heels and balls of the feet is interrupted with resulting vesiculation, crushing of the bullae and infection; or the toes and feet are injured and infected in all sorts of ways. Purulent periostitis often results; the bones of the fingers, toes, hands and feet are laid bare and they are expelled in necrosis if not professionally removed, leaving awful mutilations.

The final result often is that all fingers are wanting on the hands; that only small, soft, disfigured prominences provided with crippled nails are left behind on the otherwise atrophic middle hand; that the toes are cast off, the metatarsal bones atrophy, and that the tarsal bones also necrose, so that the foot finally appears as a pyramidal lump or pillow at the lower end of the tibia.

Indurated ulcers on the legs, like varicose ulcers, are often observed; they heal under appropriate treatment.

The mucous membranes of the nose, mouth, throat and pharnyx do not seem to suffer and the olfactory, acoustic and optic nerves seem to remain intact. Hansen and Looft, however, claim that the senses of smell and taste may be reduced, even entirely gone in cases of very pronounced facial paralysis. I remember, though, a case in one of the leproseries in Bergen, a blind man, terribly mutilated otherwise, going around enjoying his snuff-box—his only pleasure. His hands were completely anesthetic; with his tongue, he ascertained if the snuff was there and he managed to get it into the right place. He was in all his misery a happy man—decidedly so when a "hypo" was added to his snuff.

Gastric Ulcer and the Appendix.—There is now no longer any doubt in my own mind that the commonest site of a "gastric ulcer" is in the right iliac fossa. That is to say that in the majority of cases in which the most erudite teaching of the most astute German physicians would justify or compel a diagnosis of ulcer, the patient is suffering from a lesion elsewhere, and more often than not from a lesion in the appendix. —Sir Berkeley Moynihan, Address in Surgery, Brit. Med. Assn., 1913.

THE DERMATOLOGIC ASPECTS OF LEPROSY *

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In undertaking a brief presentation of the dermatologic side of leprosy there stands out the prime question: From what point of view? To a mixed audience, not technically trained in terms of dermatology, the subject must appeal most from the diagnostic point of view, and in this apprehension of the subject a brief synopsis of salient skin leprosy is to be presented.

There is no stereotyped classification of leprosy, and even when the attempt is made to make distinctive groups of types of the disease the exceptions are more numerous than the rule.

It is easier to study the skin evidences of leprosy on the presenting lesions than to try to fix the types in which any complex of symptoms may be looked for. On this basis, then, we may speak of macular leprosy, tubercular leprosy, bullous leprosy, pigmentary leprosy, nodose leprosy, scaling leprosy, ulcerative leprosy; and as aberrant occurrences, atrophic leprosy, mutilating leprosy and papular leprosy.

MACULAR LEPROSY

Macular leprosy may occur in three forms. First, as an expression of a general impression of the individual carrying a circulating infection of the disease and its organism. Such an eruption is evanescent; it has all the characteristics of an erythema multiforme of toxic type and the eruption is not characteristic of leprosy. Here the lesions are of various sizes, bilateral and symmetric, general over the whole body, and are light red, level with the skin, fade on pressure, have no fixed pigment and may be quite hyperesthetic so far as itching, heat and hypersensibility are concerned. Such macules may disappear entirely or they may continue *in situ*, giving gradual place to infiltrated and even nodose lesions in the same areas. More often they disappear and may recur months afterward. With such evidences the general symptoms of leprosy are associated.

Macular leprosy may be pigmentary from the start. Over the buttocks, hands, face and legs, particularly, the eruption shows in reddish-brown macules, more or less rounded in outline, level with the skin, and persistent in all of these characteristics.

The true type of macular leprosy is the most characteristic. Ovoid macules, varying in size, appear on the face, over the shoulders, over the arms and forearms, over the legs, more or less scattered, edges elevated and centers depressed; often the edges are highly pigmented, brown or purplish, and the center is of normal color or even a dirty white.

The last-named macules are anesthetic; the others are not. The anesthesia is more marked at the borders. More than this, in the borders of the last-named macules, it is usually easy to demonstrate the lepra bacilli; in the first two varieties of macules, it is almost impossible to find any bacilli—arguing, as has been suggested, that the eruption is rather an exanthem than a deposit.

Macular leprosy must be differentiated from syphilis, and from erythema multiforme. From the first the macules may be easily distinguished by their preference for the extensor surfaces, by their large size and by the peculiar dusky color in the pigmentary forms. Macular syphilis is not infiltrated.

From erythema multiforme, the diagnosis is made on the more established eruption, lasting weeks or months, and in the pigmentary and infiltrated types by the fact that in both the lesions do not fade on pressure. Sometimes iodism produces infiltrated lesions resembling leprosy, but here the whole lesion is turgescent and highly inflamed, and therefore red and not dusky-brown red.

TUBERCULAR LEPROSY

The tubercle of leprosy is of two forms.

The large tubercle is found about the nose, on the chin, cheeks, in the pendulous portion of the ear and sometimes on the hands and on the legs. The color of these lesions is characteristic—brown red. They are firm, rounded masses, deep set in the skin, not uniform in size and with no tendency to disintegrate while the general condition of the patient is good. The lesions are almost invariably anesthetic.

Lupus and syphilis may be confused with this form of tubercle. In lupus the lesion is purple, granulomatous in consistency and ulcerating as soon as the tubercle is mature. The general symptoms in leprosy (nasopharyngeal and laryngeal, particularly) are ordinarily concomitant. In syphilis the tubercles are smaller, grouped in crescentic formation, and scar in ulcerating, with marked and characteristic pigmentation.

The small tubercle of leprosy is quite different. Here the lesions cluster close, like small pea-sized bits of beeswax embedded in the skin. Over the backs of the hands, the chin, the borders of the lips and the cheeks are the sites of predilection. The lesions are a dirty yellow. This type of tubercular leprosy is usually rapid in its course, presumptively because the lesions in the skin are probably only the expression of a general tubercular condition of the viscera. These lesions are likewise anesthetic.

Only xanthoma and disseminate tuberculosis need to be considered in differentiation. Xanthoma presents flat tubercles, deep seated, bright yellow, smooth and usually lissom to the touch. Stretching the skin in xanthoma shows the streaks of connective tissue in the striae of the lesion; stretching the skin in leprosy only intensifies the waxy appearance of the tubercle. Xanthoma at times is painful; leprosy is anesthetic.

Tuberculosis of the miliary form may be disseminate in the skin and may be found in the areas in which tubercular leprosy is found. The lesions are in closer formation; usually occur as smaller tubercles and usually are found about the joints rather than at the peripheral extremities. Confusion often arises in these two conditions occurring on the face, but as the organisms of leprosy and of tuberculosis can be almost always demonstrated, this method, even carried to cultural procedure, will finally decide.

BULLOUS LEPROSY

Bullous leprosy must be noted as important, particularly as it is an early form. The lesions come on the hands or feet, over the joints of the fingers, as a rule. The bullae repeatedly occur at the same spot, until finally the epidermis is lost and bullae can not form. Scarring, with mottling pigment, follows. Sometimes, necrosis supervenes and the deformity from loss of bones may result. This dermatologic evidence is really the expression of a disturbance in the nerve, usually the ulnar, along which may be found, when the bullae occur, marked thickening or even distinct nodosities along the sheath. But I am limited to cutaneous leprosy, so may not further digress.

* Read in the Section on Practice of Medicine of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

PIGMENTARY LEPROSY

In some instances the local evidence of leprosy manifests itself in diffuse pigmentation of the face, neck, trunk, hands, arms and legs. At times the whole body may be so pigmented. The slight mottling is peculiar to this disease and makes the differentiation from the pigmentary evidences in vitiligo (in which the demarcation of color is abrupt), in Addison's disease (in which the pigment is solid and in selective areas), in syphilis (in which the mottling is limited to the neck) and in mycosis fungoides (in which the pigment is always cast over or under the premycotic furfuraceous scales).

NODOSE LEPROSY

Nodose leprosy is usually facial, coming on after the diffuse macular form has spread over the face and has persisted. As the skin thickens, rugosities develop and each of these separate into larger or smaller masses, forming nodes. At first there is some mobility, but this gradually disappears until a true satyriasis is established in the facies; and as the disease grows older and the skin roughens, there grows a more and more fixed condition of the skin, until the rugae resemble the thickened areas so characteristic of the lion's face and from which has been derived the term "leontiasis" as applied to this form of leprosy. Ulcers now ensue as a result of failure in nutrition, and one by one the features change by necrosis until the last stage of a fearful process may end the history of the case by death.

Hypertrophic rosacea, when general over the face, may resemble leontiasic leprosy, but at no time is the mobility lost, and the skin remains soft in spite of hypertrophy.

Chronic edema may likewise be mistaken for this disease, but in edema the smooth skin with the pitting over all areas makes a clear diagnosis, even if the complication of the keratinous changes in the eys, and the ulcerative changes in the respiratory tract were not also in evidence to proclaim a more sinister diagnosis.

SCALING LEPROSY

Scaling leprosy is rare. Here the whole skin shows signs of degenerative change, and wrinkling is seen everywhere. No part of the body is free. Thinning instead of thickening occurs, and it is not hard to find the trophic changes of the skin accompanied by like changes in the peripheral nerves and in the mucous membranes of the nasopharynx. The conjunctivae are also involved and ectropion is common. The musculatory changes in the hands are also present and the peripheral nerve changes are found at the same time as the general scaling of the body. The skin everywhere has a dirty gray color, with lines of atrophy showing through the scales. The loss of hair over the pubis, in the axillae, over the body and of the eyebrows, lashes, beard and scalp carry further the picture of the atrophic process.

Xerosis in all its forms is easily differentiated by the consistent atrophy in the leprosy of this form. In xerosis the process is as consistently hypertrophic and the more severe the scaling in xerosis the more the tendency is to hypertrophic change.

ULCERATIVE LEPROSY

Ulcerative leprosy is nearly always found as an expression of nerve destruction and located on the sole of the foot, usually under the fleshy part of the great toe; it may occur at the heel. This ulcer, "neurotic ulcer" in type, is usually one of many symptoms of nerve leprosy, but as an ulcer it shows cutaneous evidence and must be mentioned here. The cylindrical cavity, sharply outlined, rather deep, and the hard and horny edges, with the nauseating odor, are sufficient to make a diagnosis.

ATROPHIC LEPROSY

Atrophic leprosy is also of nerve origin, but with cutaneous expression usualy referred to the extremities. The whitlow, atrophy of the skin of the hands and feet, loss of intermediate phalanges resulting in superficial ulcers and in deformity, the scarring and pigmentation, all are the cutaneous evidences. Syringomyelia may be of other than leprous origin, but the altered or lost sensation, associated with peripheral lesions like the foregoing, the occurrence of contractures of the hand, of atrophy and of occasional bullae, should lead to a search for the bacilli for a differentiation.

When leprosy is advanced, all lesions may give way to degenerative changes, and tubercles or macules may break down, so that ulcerative leprosy may become general. The nasal bones break down; the lips excoriate and slough off; fingers drop; toes are spontaneously amputated; the legs or arms show areas of necrosis, and finally the terminal members one by one are made to fall until at last "the frame bears only semblance of its past, human once, but now distorted, bound in shapes fantastic and shorn of everything but form."

PAPULAR LEPROSY

In the various exacerbations of leprosy, particularly when the lesions begin to break down, when the toxins are liberated, or the masses of dead bacilli are sent into the circulation, there is frequently a rise of temperature, producing the "fever of leprosy," now recognized as an entity. With this process a general eruption appears of lenticular papules. This is the only form of papular leprosy so far known, and it is questionable if it may be properly called papular leprosy, as the papule is really only an evanescent exanthem, disappearing with the defervescence of the attack.

The papules are free of organisms and are purely exudative in type, inflammatory and hyperesthetic if the sensation is disturbed at all.

CONCLUSION

Much more might be said of cutaneous leprosy, but in the time allowed in a symposium of this sort it would be impossible to handle the subject exhaustively. The final word may be said that by learning the lesions which may be present in leprosy, it may be possible to recognize them by differentiation, while the attempt to carry pictures of classical descriptions may fail of service in the simple cases in which a diagnosis means so much in the matter of care and cure.

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ABSTRACT OF DISCUSSION*

ON PAPERS OF DRS. DYER, BOECKMANN AND BLUE

DR. H. M. BRACKEN, St. Paul: My chief interest is in the care of those afflicted with leprosy. Those who have to do with the handling of this disease appreciate the importance of an early diagnosis. It was said in the past that we had no American-born lepers in Minnesota. We now have a record of seven lepers born in Minnesota, four of whom are still alive. When a resident of this state becomes infected with leprosy we can attribute it to one of two causes, either a failure to diagnose the disease sufficiently early in those who are exposing others, or an unsanitary condition in the family that makes it almost impossible to prevent infection. This disease is not contracted casually; it is not picked up in the railway-cars or in the street-cars; it is a house disease. From the administrative point of view it should be easier to control

this disease than tuberculosis, and yet people have the greatest dread of leprosy and practically pay little or no attention to tuberculosis. This is not reasonable. In 1900 I collected data covering twenty-seven cases in living patients in Minnesota; now we have but thirteen. From this it can be seen that the disease is gradually disappearing. All of the cases in Minnesota, except the seven already referred to, have been brought in from other countries. Many of the early cases were brought in from Norway and Sweden, but latterly from other countries, namely, Italy, Canada, the Philippine Islands, etc.

The important question is, How are we going to take care of the lepers? Dr. Blue's paper dwelt on this phase of the subject. It is not practicable for each state to maintain a leprosery. There are not enough cases to demand it. The troubles in Texas emphasize this difficulty. In this state, as a rule, we have been able to handle the cases at home. Many of the lepers are in comfortable circumstances, and when they are reported to us we simply tell them the danger to the other members of the family and recommend that proper precautions be taken to prevent infecting others. These recommendations they will gladly carry out, as a rule, for they do not want to infect their own people.

The national government should provide a leprosery; but where? Whenever this question is raised, as Dr. Blue states in his paper, a local sentiment is worked up against it. We might, of course, try to get some of those states which have made provision for the care of lepers to open the doors of their institutions to lepers from other states, on a business basis.

DR. M. L. GRAVES, Galveston, Tex.: Texas has lepers. As a matter of fact, the law and appropriation had its origin in Galveston, where the larger number of leprosy cases have occurred in the state. A few years ago Dr. E. S. Cox, our county physician, collected statistics showing that about fifteen lepers had been living in Galveston at various times. Our health physician then went before the state legislature and presented photographs of the quarters of these lepers and of their distressing conditions and secured an appropriation of forty thousand dollars to erect a lepers' home. A commission was appointed by the governor, and traveled over the state of Texas, uninvited and frequently repelled by communities, until it had to give up in disgust the opportunity to establish this home.

During the eight years in which I have been in Galveston, there has hardly been a year in which I have not been able to demonstrate to my classes cases of leprosy. We have no means or methods of isolation, legally, in our state. The first case that I exhibited to my classes was that of a negro. When I saw that patient two years later at Houston, I found him in the suburbs sitting on the platform of a suburban saloon, surrounded by fifteen or twenty laborers. On account of the wide distribution of the disease throughout the United States, and the indisposition of local communities to care for these patients—the work is nowhere well done, so far as I know, except, perhaps, in the state of Louisiana, under the direction of Dr. Dyer—it seems to me that it would be best for us to endorse the recommendation of Dr. Blue and establish a federal leprosarium to take care of these people. I believe that it will be far easier to do something of that kind when we have a national department of health with a cabinet officer at its head.

DR. GUILFORD H. SUMNER, Des Moines, Iowa: I wish to lend my influence and my hearty approval for the establishment of a leprosery whereby the states may be relieved in cases of emergency. One evening I received a telegram from the secretary of the State Board of Health of Michigan, stating that a leper had escaped from that state and was probably located in the city of Centerville, Iowa. I immediately telegraphed a member of our board who lives at Centerville, and by 10 o'clock that night he had the man located. He had been a resident of the state of Michigan for about twenty-eight years. I was assured by the Michigan board that the state of Michigan would remove him, and I at once placed him under quarantine, as provided for in the Iowa rules and regulations, and expected, of course, that he would be removed by our sister state. Days and weeks passed, and finally I was notified by the Michigan secretary that they had no money to remove this patient, but that if we would send him home they would receive him. I at once began to take steps to return this man to Michigan, and I at that time did not consider it a very serious proposition, but, after communicating with Surgeon-General Blue, I found that I would have to remove him in a special car and send an attendant. The railway company said that they would remove the leper for eighteen fares from Centerville, Iowa, to Chicago, and for twenty-five fares from Chicago to Bay City, Mich. I inquired the cost and was told that it would be $216. Just as I was about to make arrangements to move him, the railway company told me that they had concluded that they would have to remove him by special engine and car. I again inquired the cost and was told seventy-five fares from Centerville to Chicago, and one hundred fares from Chicago to Bay City. I asked the cost and was told $1,160. I appealed to the governor and the executive council of my state to ascertain what I could do. I was told that there was no money with which to remove the leper. By that time all were anxious to have the leper removed from the state. I was at a loss to know what to do. The next obstacle was that the secretary of the Michigan Board of Health had served notice on the Michigan Central Railroad that no car or train bearing the leper would be permitted to enter the state of Michigan or stop at Bay City. The governor and executive council gave me five hundred dollars to pay expenses of moving. I employed a fellow with a big touring-car and gave him the five hundred dollars to convey the leper across Indiana and Illinois and into the state of Michigan. I obtained the consent of the Illinois board and the Indiana board. The car was fumigated and disinfected and brought back to Iowa, and my trouble ceased.

Now I do not know that this will occur again, but with a leprosery under government control I think that we might be able to turn our lepers over to the U. S. Public Health Service.

DR. W. C. RUCKER, Washington, D. C.: Very few of the national governments of Europe have any national quarantine system. If a leper went to England, the vessel would be met by the officials of the customs service, who would look over the passengers on the boat, and then notify the port physician if they discovered any disease which they considered quarantinable. He would then come and look over the suspected persons; but the preliminary diagnosis is made by a non-medical man. France has a quarantine system, but it is not a national quarantine system; it is governed by the various departments of the French government. There is no national quarantine system in Germany. I think there are four states of the twenty-six which have a quarantine and each one has its own independent system. They operate entirely independently, as a rule, but occasionally unite in important instances. I do not know what the Italian and Spanish quarantine systems are, but I do not think that they are very extensive. The United States is the only country in the world that has established a good and complete national quarantine system.

DR. E. BOECKMANN, St. Paul: When I was in Bergen I was instrumental in exporting some lepers to Minnesota, because it was the general belief that when they came over here they would do much better and not be a menace to the population, and I think that that has proved true. On the other hand, I have been instrumental in sending lepers back again, on account of my influence with Dr. Danielsen at the hospital in Bergen. I wrote him asking if he would be kind enough to receive lepers from here on three or four occasions in the earlier days of my residence in Minnesota. They went out without any trouble whatsoever. I am positive that, if a Norwegian here in Minnesota has become a leper after coming to this country, the authorities in Norway would be willing to take him back again to one of their national leproseries, if transportation could be arranged for.

MORBIDITY REPORTS

THEIR PURPOSE AND PRESENT STATUS *

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As knowledge has been acquired of the causes of disease, and it has become known that a large number of diseases are preventable, communities have established health departments. The health department as it is now understood is a comparatively modern institution. Its era may be said to have just begun.

THE PURPOSE OF MORBIDITY REPORTS

Whenever a community or state has progressed in its social life to the point where it has established an active health department it has required that physicians report the cases of certain diseases occurring among their patients. This has been recognized as a necessity, for the work of the health department is, if anything, the prevention of disease; and no health officer, no matter how efficient he may be, or how many able assistants he may have, can hope effectively to prevent or control a disease in a community unless he has some means of knowing when, where and under what conditions cases of the disease are occurring. Aside from any influence he may have in securing unpolluted water-supplies and better living and working conditions for the people generally, his field of action is practically limited to the notifiable diseases, and the extent and effectiveness of his work are determined by the completeness with which cases are reported by physicians. Unless cases are reported the health officer is in the position of one trying to combat an invisible enemy of whose location, numerical strength and times of attack he has no knowledge.

Morbidity reports had their origin in the requirement that cases of certain especially dangerous contagious diseases be notified to the proper authorities. This was for the purpose of making known the foci of these diseases so that the well could avoid unnecessary exposure, and, in some instances, so that the authorities could institute measures to prevent further dissemination of the infection. As knowledge of the means of spread of the communicable diseases has been acquired, the importance of knowing of the occurrence and location of cases has become more and more apparent. With increasing information of the preventability of many diseases and the possibility and need of their control, there is a proper tendency to require the notification by practicing physicians of cases of not only the more dangerous contagious maladies, but also of other infectious diseases, and of some diseases which are not known to be infectious, as cancer and pellagra. The last two named and others of their kind have been made notifiable because of the importance of knowing of their occurrence and varying prevalence, and the possible value of such knowledge in assisting in the finding of their causes and means of spread. In the case of at least one disease, ophthalmia neonatorum, notification has been required of nurses, midwives and parents for the purpose of making prompt and efficient treatment possible.

Recently a number of states have passed laws requiring the notification of certain industrial diseases, chief of which are the metallic poisonings. This is primarily for the purpose of showing where conditions exist capable of producing these affections so that measures may be taken looking to the remedying of the conditions and the prevention of similar injury to others.

The present purpose of morbidity reports is primarily fourfold and may be stated as follows:

1. To show the occurrence of cases of infectious diseases which constitute foci from which the infection may spread to others, as in scarlet fever, tuberculosis and small-pox.

2. To show the occurrence, distribution and varying prevalence of certain maladies of which the cause or means of spread is unknown, because of the possible value of this information in ascertaining the cause or means of spread, as in pellagra and cancer.

3. To make proper treatment possible, as in ophthalmia neonatorum.

4. To show the existence and location of conditions that are capable of causing illness or injury, as in the industrial diseases.

MORBIDITY REPORTS IN ENGLAND

In England beginning with the year 1911 the medical officer of the local government board has compiled reports of the notifiable diseases for all England and Wales. These diseases are small-pox, typhus fever, scarlet fever, diphtheria, typhoid fever, puerperal fever, erysipelas, plague, cholera, relapsing fever, pulmonary tuberculosis (added Jan. 1, 1912), cerebrospinal fever (added Sept. 1, 1912) and acute poliomyelitis (added Sept. 1, 1912). The local sanitary officers are required by a general order of the local government board, promulgated Dec. 13, 1910, to transmit to the medical officer of the board each Monday a statement of the cases notified to them during the preceding week. The medical officer of the local government board is the chief sanitary officer for England.

The experience leading to the present system for morbidity reports in England and Wales was similar to that through which the United States is now passing. Soon after the establishment of the registration of deaths in England, in 1837, it became evident that the record of deaths did not give the kind of information necessary for the control of disease and that sanitary officials must have other and additional knowledge of the occurrence of cases. Various men, societies and associations advocated at different times plans for the notification of sickness throughout the country. The British Medical Association, as far back as 1865, made repeated efforts to have adopted a uniform system for morbidity reports.

MORBIDITY REPORTS IN RUSSIA

In Russia sanitary regulations adopted in 1905 require that all physicians, whether engaged in private practice or in government service, shall forward to the local sanitary inspector having jurisdiction a monthly report of patients treated by them in private practice and in hospitals, the reports for the patients in private practice and those in hospitals to be made separately. In addition to this every case of infectious disease is to be reported at once. A heavy penalty is imposed for those failing so to report. Every hospital and clinic is also required to keep a detailed record of its patients and report regularly to the sanitary inspectors. The data received by the local sanitary officials in the monthly reports from hospitals and practitioners are compiled and forwarded annually to the chief sanitary inspector of the Ministry of the Interior on forms printed for the purpose. The chief sanitary inspector at St. Petersburg compiles these reports of the occurrence of sickness throughout the empire and publishes them annually.

* Read in the Section on Preventive Medicine and Public Health of the American Medical Association, at the Sixty-Fourth Annual Session held at Minneapolis, June, 1913.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

These sickness records for Russia include all parts of the empire. Among the infectious diseases for which statistics of the occurrence of cases are compiled are small-pox, scarlet fever, diphtheria, measles, whooping-cough, influenza, typhus fever, typhoid fever, dysentery, cholera nostras, Asiatic cholera, epidemic gastroenteritis, mumps, erysipelas, septicemia and pyemia, rheumatic fever, croupous pneumonia, tuberculosis, malaria, scabies, trachoma, syphilis, soft chancre and gonorrhea. Statistics are also compiled for mental diseases, traumatic affections and vaccination for small-pox.

MORBIDITY REPORTS IN THE UNITED STATES

In the United States the requiring of the notification of cases of sickness is a power residing in the respective state legislatures. In some of the states authority has been given to the state boards of health to cover the subject by regulations. In most instances local authorities have the right to supplement the state requirements by such additional ones as may be needed. The laws and regulations of the several states differ widely, as do also the efforts made to enforce them.

The common and most general plan is to require that the original report be made by the physician to the local health officer immediately on diagnosis of the case. The local health officer, either immediately or at intervals, forwards to the state health department a transcript or a summary of the notifications received by him. In a number of states these reports by the local health departments are made to the state authorities daily, in some weekly, in one state (Ohio) twice a month, in several states monthly, and in a few states at longer intervals. In the states in which the reports are made daily the state health department is in a position to keep constantly informed regarding the prevalence of the notifiable diseases. The same is in less measure true when the reports are made weekly. When the reports are made at longer intervals the current value of the information to the state department is largely lost.

In one state (Florida) physicians are required to report the notifiable diseases directly to the state health officer or his representative, the commoner diseases by mail, and yellow fever, small-pox and cholera by telegraph at state expense. This in effect makes the state health officer also the local health officer and responsible for the control of the notifiable diseases, the control of disease and the notification of cases being inseparable, the latter giving the necessary information by which to direct action in the former.

In the states giving special attention to the control of disease the territory has been so divided that all parts are within the jurisdiction of a local health department responsible for the notification and record of sickness and sanitary administration in matters strictly local in nature. In most instances the cities have their own health departments, and rural territory is under the jurisdiction of either county or township health officers.

So far as the results obtained are concerned the effectiveness of public health administration depends not so much on the nature and extent of the state laws and regulations as on the manner and degree of their enforcement. This is true of the requirements for morbidity reports as well as those relating to other subjects. State laws regarding the notification of disease and most other public health matters are impossible of proper enforcement unless the state health department has some control over local health officers. When the local health authorities are responsible only to their respective communities the state health department is practically without jurisdiction, and its usefulness is limited. In South Dakota this control over local authorities is obtained by making the county board of health consist of the state's attorney for the county and two physicians appointed by the state board of health; one of these physicians becomes the county superintendent of health. In Indiana the state board of health has the power to remove from office any county health commissioner or health officer in the state. In Virginia the state board of health appoints three physicians in each county and city who, with the chairman of the county supervisors or the mayor of the city, constitute the county or city board of health. In most states the local boards of health or health officers are either elected or appointed locally and the state has little if any direct control over their work. Still other plans have been adopted in other states.

THE NOTIFIABLE DISEASES

The following-named diseases are those specified by the various state requirements with the number of states in which each is notifiable:

Actinomycosis	2	Puerperal fever	2
Anthrax	7	Rabies	7
Barber's itch	1	Relapsing fever	3
Beriberi	4	Rocky Mountain spotted fever	2
Cancer	1	Scarlet fever	39
Cerebrospinal meningitis	24	Small-pox	44
Chagres fever	1	Syphilis	2
Chicken-pox	16	Tetanus	5
Cholera (Asiatic)	38	Trachoma	8
Dengue	6	Trichinosis	4
Diphtheria	40	Tuberculosis:	
Dysentery	1	All forms	22
Echinococcus disease	1	Communicable forms	1
Epidemic dysentery	3	Laryngeal	5
Amebic dysentery	2	Pulmonary	9
Erysipelas	3	Typhoid fever	27
Favus	1	Typhus fever	26
Follicular conjunctivitis	1	Uncinariasis	5
German measles	4	Whooping-cough	20
Glanders	8	Yellow fever	30
Gonococcus infection	1	Venereal diseases	2
Leprosy	22	Mental deficiency (including epilepsy)	1
Malaria	5	Industrial diseases:	
Measles	25	Metallic poisonings due to	
Mumps	4	Lead	8
Ophthalmia neonatorum	12	Phosphorus	7
Paragonimiasis (lung-fluke disease)	1	Arsenic	8
Paratyphoid fever	2	Mercury	7
Pellagra	4	Anthrax	6
Plague	23	Compressed-air illness	7
Pneumonia	6		
Poliomyelitis	21		

Forty-eight different diseases are specifically named as notifiable by law or regulation in one or more states. These are in addition to industrial diseases and mental deficiency. Fourteen diseases, cerebrospinal meningitis, cholera, diphtheria, leprosy, measles, plague, poliomyelitis, scarlet fever, small-pox, tuberculosis, typhoid fever, typhus fever, whooping-cough and yellow fever, are notifiable in twenty or more states. Small-pox is specifically made notifiable in forty-four states. This is a greater number than that for any other disease. Diphtheria is notifiable in forty states and scarlet fever in thirty-nine. Of the less commonly notifiable diseases cancer is notifiable in New York State and Chagres fever in Alabama. Venereal diseases are notifiable in California, Utah and Vermont. When reported, however, the name of the patient need not be given. In Porto Rico syphilis is among the notifiable diseases. Cases of mental deficiency, including epilepsy, are notifiable in New Jersey. Amebic dysentery and paratyphoid fever are notifiable in the state of Washington and the territory of Hawaii; bar-

ber's itch is notifiable in Oregon; favus, echinococcus disease and paragonimiasis are notifiable in Washington and follicular conjunctivitis in Hawaii.

Occupational Diseases.—Eight states have enacted laws requiring the notification by physicians of certain occupational diseases. These states are California, Connecticut, Illinois, Maryland, Michigan, New Jersey, New York and Wisconsin. The diseases specified in seven of the laws are compressed-air illness and poisoning by lead, phosphorus, arsenic or mercury or any of their compounds. Anthrax is named in six of the laws. The Illinois law, which differs to some extent from the others, requires that employers engaged in carrying on any process of manufacture or labor in which sugar of lead, white lead, lead chromate, litharge, red lead, arsenate of lead or Paris green are used, or in the manufacture of brass or the smelting of lead or zinc, shall once every calendar month have all the employees who come into direct contact with the poisonous agencies or injurious processes examined by a competent physician to ascertain if there exists any occupational disease. The physicians who make these examinations are to report their findings immediately to the state board of health. In six of the states the physicians report to the state board of health, in Connecticut to the commissioner of the Bureau of Labor Statistics and in New York to the commissioner of labor.

RESULTS ATTAINED IN CERTAIN STATES AND CITIES

The completeness of the reports of the notifiable diseases in states and cities in which there is registration of deaths may be estimated with some degree of accuracy by comparing the number of cases reported with the number of deaths registered as due to the same cause. In doing this, however, it must be borne in mind that we do not know the fatality-rate of many diseases, for up to the present there have seldom been satisfactory morbidity records of sufficiently broad application to permit of the determination of such rates, and also that the fatality-rates of many diseases vary from year to year and with the seasons and geographic locations.

Typhoid fever.—To show the results obtained in the notification of typhoid fever five states and three cities have been taken, all of which publish their morbidity records.

TABLE 1.—NUMBER OF CASES OF TYPHOID FEVER REPORTED FOR EACH DEATH REGISTERED*

States	1906	1907	1908	1909	1910	1911	Aver.
Colorado	7.2	7.6	7.9	7.3	7.3	...	7.46
Connecticut	4.4	5.0	6.2	5.8	6.6	...	5.6
Massachusetts	6.3	5.9	7.2	7.0	...	...	6.6
Michigan	4.1	3.0	3.6	3.9	4.9	...	4.9
New York	...	...	5.0	6.0	6.2	...	5.44
Cities							
Boston	8.1	9.0	10.0	7.3	8.1	7.9	8.4
New York	5.4	6.0	5.7	6.2	6.4	6.3	6.0
Washington, D. C.	6.9	8.1	7.5	6.8	8.8	...	7.62
Hospitals							
Boston City	...	...	...	7.6	7.0	9.3	7.96

*In this table and Tables 2, 3 and 4, the years ended Jan. 31, 1910, 1911 and 1912.

Among the states the highest average was 7.46 in Colorado and the lowest 4.9 in Michigan. Among the cities the highest average was 8.4 in Boston. This was higher than that for the city of Washington, although during the period under consideration typhoid fever was under special investigation there and the morbidity records were presumably reasonably complete. It will be noted that the average number of cases reported for each death was higher in the states of Colorado and Massachusetts as a whole than in the city of New York. The greatest number of cases per death reported for any one year in the states and cities enumerated was ten in Boston during 1908; the lowest was three in Michigan during 1907. It is of interest to compare with these averages that of the Boston City Hospital, in which during the three years 1909 to 1911 there was an annual average of one death in every 7.96 cases.

The averages for the same years were not taken in all instances, as the annual reports for recent years were not yet available for some of the states and cities.

Diphtheria.—Averages for diphtheria similar to those given for typhoid fever appear in Table 2.

TABLE 2.—NUMBER OF CASES OF DIPHTHERIA REPORTED FOR EACH DEATH REGISTERED

States	1906	1907	1908	1909	1910	1911	Aver.
Colorado	5.6	5.2	6.6	9.3	8.3	....	7.0
Connecticut	6.8	7.5	7.8	9.5	8.8	....	8.08
Massachusetts	11.2	11.9	12.0	10.8	....	....	11.47
Michigan	8.1	7.5	7.7	7.7	7.5	....	7.7
New York	....	....	8.6	8.9	9.3	....	8.9
Cities							
Boston	....	16.4	15.6	13.7	15.5	17.0	15.64
New York	....	8.8	9.3	8.9	9.9	10.5	9.48
Washington	....	14.7	21.9	12.3	15.3	....	16.05
Hospitals							
Boston City	....	....	....	11.7	15.3	12.8	13.27

It will be noted that the highest average number of cases reported in the three cities was 16.05 in Washington, and the highest average for the states 11.47 in Massachusetts; also that the Massachusetts state average is a trifle higher than that of New York City, and that the averages for both Boston and Washington are higher than that of the Boston City Hospital.

Scarlet Fever.—Similar averages for scarlet fever are given in Table 3.

TABLE 3.—NUMBER OF CASES OF SCARLET FEVER REPORTED FOR EACH DEATH REGISTERED

States	1906	1907	1908	1909	1910	1911	Aver.
Colorado	17.0	14.4	14.3	11.3	18.6	....	15.12
Connecticut	28.8	20.9	27.2	19.1	24.3	....	24.06
Massachusetts	38.7	27.8	20.6	25.2	....	....	28.07
Michigan	12.0	15.1	16.0	18.1	21.5	....	16.54
New York	....	....	18.2	18.4	19.5	....	18.7
Cities							
Boston	34.4	48.1	25.9	21.4	35.3	20.7	30.97
New York	....	19.8	18.3	15.8	19.8	21.3	19.0
Washington	28.9	84.0	32.7	34.8	91.0	....	54.28
Hospitals							
Boston City	....	....	....	19.6	22.7	18.6	20.3

In the states given, the highest average number of cases reported for each death was 28.07 in Massachusetts, and the lowest 15.12 in Colorado. In the cities the highest average was 54.28 in Washington. The Boston City Hospital average was 20.3 and was exceeded by that of the states of Connecticut and Massachusetts and the cities of Boston and Washington. The large annual average number of cases, 54.28, reported in the latter city for each death may possibly be due to a difference in the virulence of the disease.

Measles.—Similar figures for measles are given in Table 4.

TABLE 4.—NUMBER OF CASES OF MEASLES REPORTED FOR EACH DEATH REGISTERED

States	1906	1907	1908	1909	1910	1911	Aver.
Connecticut	29.3	30.5	34.4	55.1	43.7	....	38.6
Massachusetts...	74.8	39.8	44.2	58.6	....	....	54.35
Michigan	39.4	48.2	40.1	34.1	58.8	....	44.12
New York	....	....	50.9	40.6	54.4	....	48.63
Cities							
Boston	79.3	46.4	39.0	37.8	42.5	57.4	50.4
New York	....	22.8	39.4	34.0	45.1	38.8	36.02
Richmond	....	35.0	51.1	40.0	80.4	....	51.62
Washington	....	....	589.0	170.1	80.3	....	279.8
Hospitals							
Boston City	....	....	....	8.3	18.1	19.3	15.23

The highest state average for measles was that of Massachusetts, 54.35 cases; the highest city average was 279.8, that of Washington, where in 1908 there were 589 cases reported for each death. The lowest state average, 38.6, that of Connecticut, was higher than the lowest city average, 36.02, that of New York City, and over twice as high as the average in the Boston City Hospital. In the table for measles the City of Richmond, Va., was added because during the year 1910 special attention had been given by the health department to the notification and control of the disease. During that year, as will be noted, there were over eighty cases reported in the city for each death. As in scarlet fever in the city of Washington, whether the large number of cases reported for each death was due to a better reporting of cases or to a less accurate registration of the causes of death or to a diminished virulence of the disease is a matter of conjecture. The comparatively high fatality-rate of the Boston City Hospital is in accord with the common experience of hospitals, which undoubtedly accounts for the comparatively high fatality-rates usually cited in medical literature.

In this connection recent epidemics of measles in a number of cities are of interest. During epidemics the wide-spread prevalence of the disease is common knowledge, and it may properly be expected that at such times the notification of cases will be unusually complete.

The cases and deaths reported in these outbreaks are shown in Table 5.

TABLE 5.—CASES AND DEATHS REPORTED IN RECENT EPIDEMICS

	Cases	Deaths	Number of Cases for Each Death
Pittsburgh, Pa., 11/1/12 to 5/10/13 ..	9,003	147	61.2
St. Louis, 4/1/12 to 2/28/13	4,281	37	115.7
Richmond, Va., 1/21/13 to 4/26/13 ...	3,821	22	173.2

CONCLUSION

As the control of disease presupposes a knowledge of its occurrence, it is of importance that every local health officer know of the prevalence of disease not only in his own jurisdiction but in neighboring cities and counties as well. In the United States the state health department needs to know of the prevalence of disease throughout all parts of its territory, and also in neighboring states. For the purpose of the more extensive and more efficient public health work which is much desired there is needed a carefully worked out plan whereby all health authorities can be advised currently of the existence of epidemics and the prevalence of disease throughout the country. In addition to the information this would give of the approach of extending epidemic diseases, it would add immeasurably to our knowledge of epidemiology. Such a plan depends first on the conscientious reporting of cases by the physician to the local health authority, and secondly on prompt reporting by the local authorities to the state health department. The scheme, however, is not complete without the reporting by the state authorities to some common agent that will serve as a clearing-house for the state reports and publish the data at frequent intervals for the information of all. The latter is now being done in so far as it is possible. Practically all the states in which attempts are being made to secure exact knowledge of the current prevalence of disease by morbidity reports report to the Public Health Service the occurrence of disease in their respective states. For the immediate information of all the states provision has also been made for telegraphic reports at government expense of the occurrence of epidemics and of cases of diseases especially dangerous. This provision is for telegraphic reports by the state authorities to the Public Health Service of the occurrence of epidemic diseases in their respective jurisdictions. It also provides for the telegraphing by the Surgeon-General of the Public Health Service of the information thus received to the state authorities to whom the knowledge may be of value.

Pursuant to acts of Congress the reports of the occurrence and prevalence of disease received from state authorities and from other sources are published in the *Public Health Reports* of the Public Health Service, which are sent to state and local health authorities and to other sanitarians. These reports are issued weekly in editions of 8,000 copies and show among other things the current prevalence of disease throughout the United States, in so far as the information is available, and the prevalence of certain of the more dangerous epidemic diseases throughout the world.

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ABSTRACT OF DISCUSSION

DR. PAULINE M. TOWNSEND-HANSON, Marshalltown, Iowa: I believe that Iowa in the last legislative session passed a law making venereal diseases reportable.

DR. P. M. HALL, Minneapolis: Minnesota at the last legislative session made occupational diseases reportable.

DR. JAMES A. HAYNE, Columbia, S. C.: The point in Dr. Trask's paper, outside of statistics, that interests me most, is that we need a clearing-house for our morbidity reports from the different states; that is, when a disease is epidemic in some of these states, or a focus of an epidemic has started in a state, health officers of other states should know something about it. This was brought to my mind the other day by the fact that I had a relative who wished to go out to Texas; when she went to buy a ticket, she found that Texarkana was quarantined on account of a cerebrospinal meningitis epidemic. I, a health officer, did not know that there was cerebrospinal meningitis in that place. Health officers should know these things, so as to be able to prevent the spread of disease from one state to another.

The Public Health Reports being printed weekly by the U. S. Public Health Service should show when such foci exist, but a great many states in the Union make no morbidity reports whatsoever. South Carolina does make morbidity reports. They are not accurate, but, still, they show when there is a focus of infectious disease in any county. We make these reports monthly to the U. S. Public Health Service by whom they are sent out, and the people of Georgia, or North Carolina, or in other neighboring states, are able to see that such diseases are present in our state.

For instance, we have had about two thousand cases of small-pox in the last two years; we have had probably about 1,100 cases of measles since Jan. 1, 1913. None of the so-called registration area states report anything like that number. We have also had cerebrospinal meningitis. We should have better reports of morbidity statistics made to a central office.

DR. LISTON H. MONTGOMERY, Chicago: I can conceive of a case in which an adult contracts scarlet fever and the malady is so diagnosed by a reputable physician. For obvious reasons, he is dismissed from the case. Another equally reputable physician is called and fails to confirm the diagnosis. In the course of a few days, children in that family may become ill with scarlet fever and the second physician treats those children for scarlet fever. The question is, did the first person in that family, the adult person, have scarlet fever, or not? No other source of contagion was traced.

POSTOPERATIVE RENAL INFECTION*

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Postoperative renal infection may occur from an infection in some other part of the urinary tract, or be first in the uropoietic system. Already existing infections of the kidney pelvis may be the source of infection for infection of the renal parenchyma.

Independent of operation, renal infections occur during typhoid, attacks of tonsillitis, furunculosis, or from carbuncles and paronychiae. While any one of these causes may exist after operation and be the real etiologic factor of the renal infection, only such infections as occur as a direct result of the operation or its complications are here considered.

Baisch[1] states that in healthy women the urethra is seldom the seat of pathogenic bacteria, but that in those post partum, and after operation, the urethra becomes the habitat of infectious micro-organisms, and that the number present is in direct ratio to the length of time that the woman remains in bed. To this might be added that in the cases post partum and in operation attended with a discharge that bathes the urethra, the organisms are more plentiful. Such bacteria are then introduced into the bladder by catheterization, no matter what care is taken to cleanse the external genitals, and in a bladder already injured and not able to empty itself, cystitis is very apt to take place. This is especially frequent in patients operated on radically for carcinoma uteri.

A. Bauersein[2] found in eighteen autopsies following operation for carcinoma, cystitis in all, but no evidence of the infection extending through the bladder wall. He regarded the granulation tissue as a barrier to such extension, and found no bacteria beyond this. He considered the bladder infection as being due to introduction of infectious material through the urethra, or due to infection passing downward from the hematogenously infected kidney.

Sugimura[3] found in twenty-five cases of cystitis, involvement of the lower end of the ureter in all, and demonstrated that the infection in all extended along the lymphatics and not in the ureteral canal. Bauersein demonstrated that when the ureters had been extensively dissected they subsequently became embedded in a mass of indurated tissue. In these two ways a certain amount of stasis is produced, conducive to infection in whatever way it is introduced.

In extensive operations for carcinoma, in addition to the other causes above mentioned, the large amount of wound secretion flowing over the urethral orifice tends to urethral infection.

From the cystitis, infection may reach the kidney along the urethral channel, through the blood or the lymphatics. In proof of the first assertion, Stoeckel offers the history of a case in which from the lower end of the ureter urine containing pus was obtained, while from a point higher was drawn clear urine. In spite of this, many authorities doubt the ascent of infection from the bladder. In many of the experiments in which the urethra is ligated, and infection, first of the bladder, and then of the kidney, occurs, this infection may as well be explained on the hematogenous theory as that of ascension of the ureter, the organisms gaining a port of entry through the wound caused by the ligation. F. Pawlik[4] is a believer in hematogenous infection of the kidneys in cases of cystitis.

A. Bauersein proved in his necropsies on the patients dying after the Wertheim operation for carcimona, that occasionally the kidney and the perinephritic tissue became infected through the lymphatics coursing along the ureter.

In the same articles he states that he believes hematogenous infection, with the port of entry the operative wound, is more usual than is generally believed. Lichtenberg[5] thinks too much stress has been laid on ascending infection of the renal pelvis, and considers the hematogenous route the more frequent.

Franz Jaeger[6] reports two cases of acute infection of the renal parvenchyma in kidneys which were the seat of chronic pyelitis. One of these appeared to be an extension upward through the urinary tubules and the other a hematogenous infection, the lesions being multiple abscesses in the cortex. Dr. F. E. Sondern of New York has in his collection a very fine specimen of acute hematogenous infection of the cortex of a kidney, the seat of chronic pyelitis.

There are many instances of postoperative renal infection in which there has never been any catheterization of the bladder, antecedent cystitis, nor previous infection of the urinary system.

In a footnote on a lecture on colon bacillus infection of the kidney Harry Fenwick[7] speaks of the frequency of infection following operations for hemorrhoids. Here three causes are present: (1) Surface lesions in an infected area; (2) congestion of the vesical neck; (3) retention of urine. Piero Poleenigo[8] reports a case of metastatic multiple renal abscesses, following operation for hemorrhoids.

It has seemed to me that renal infections are more apt to occur when there has been some operation on the intestinal canal, or when there is a wound that is apt to be contaminated by intestinal contents. Baisch contends that the colon bacillus is seldom the primary factor, but that it subsequently is added and then supplants the other organisms. The fact that so many of these cases follow wounds especially apt to be contaminated by intestinal contents, rather speaks against this claim.

Possibly the constipation incident to postoperative intestinal peristalsis, and the purging used to overcome this may account for some of these cases.

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* Read in the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

1. Baisch: Ztschr. f. Geburtsh. u. Gynäk., 1904, viii.
2. Bauersein, A.: Ztschr. f. gynäk. Urol., 1913, iv, No. 1.
3. Sugimura: Virchows Arch. f. path. Anat., October, 1912.
4. Pawlik, F.: Med. Klin., 1912, No. 43.
5. Lichtenberg: Therap. Monatschr., June, 1912.
6. Jaeger, Franz: Ztschr. f. Gynäk., cxi, Part 4, Ztschr. f. Gynäk., Urol., iii, No. 4, 1912.
7. Fenwick, Harry: Clin. Jour., London, Feb. 2, 1910.
8. Polcenigo, P.: Folia urolog., 1911, vi, No. 5.

It has been demonstrated that the kidneys can excrete bacteria without being harmed, and it is necessary that the bacteria lodge and develop to produce pathologic lesions. The extent of the damage depends on the point of lodgment, the number and virulence.

The fact that many of these infections do not occur right after operation, but days later, make me think the infection is started from the breaking loose of thrombi from the vessels of the wound region. Points in favor of this are that usually after operation there is something indicating infection and that the acute condition is sudden.

The symptoms of infection of the kidney after operation depend on whether the pelvis is involved from an extension up the ureter, or the parenchyma is involved primarily through the blood. In the first instance there is apt to be a history of cystitis which on involvement of the pelvis of the kidney is attended with pain in the lumbar region and along the ureter, with a rise of temperature, with or without chill. Unless there is some retention in the pelvis, pain is absent, and there is little aside from moderate temperature to call attention to such an extension.

SYMPTOMS

In the acute hematogenous infections, which usually affect only one kidney, during convalescence, without any warning there is a sudden rise of temperature, sometimes preceded by chilly sensations or by a distinct chill. The temperature is generally marked by decided remissions. Pain may or may not be present in the affected kidney. Other constitutional symptoms are dependent on the severity and the character of the infecting organism. While the colon bacilli infections are attended with chills and high temperature, the constitutional disturbances are not so marked as in other infections. Often there is delirium and other evidences of disturbance of the sensorium. At first there is apt to be lessened frequency of urination due to decreased fluid output by the kidneys. Later when the ureter and bladder become involved there is frequency.

DIAGNOSIS

Early in the disease there is little in the urine to help in the diagnosis. At first it is usually high-colored, as in any other marked febrile condition. Bacteria may be isolated by culture. At the beginning there is not apt to be pus in the urine, and according to Münnich[9] this is especially so in the instances of colon bacillus infection. Later, pus casts, and at times blood, are to be seen in a urine that is highly albuminous. After involvement of the pelvis, pus is found in greater quantities.

SUMMARY

There are the three types of postoperative renal infection—through the blood, lymph-channels, and up the ureter. I think the ascending infection through the blood is the most common, and that the latter is much more frequent than is generally supposed.

The late occurrence of the infection, and the fact that most of the patients have had some rise in temperature immediately following operation, lend weight to the theory that the origin of the infection is from thrombi at the seat of operation.

Renal infections are probably more frequent than is imagined and will be detected oftener when the surgeon bears this in mind.

Below I have briefly given the histories of several cases. The hair-pin case does not properly fall within the scope of this paper, but it is inserted, as I believe the renal infection was hematogenous, the point of entrance of the bacteria being through a wound caused by the pin.

9. Münnich: Arch. f. klin. Chirurg., xcviii.

CASE REPORTS

CASE 1.—Mrs. R., a patient whom I saw in consultation with Dr. Perry S. Boynton, to whom I am indebted for the notes and the privilege of reporting the case, had one child eighteen months before her operation, April 5, 1912. The examination of the voided urine before operation showed a few red blood-cells and a few pus cells. The operation was a curettage, trachelorrhaphy, perineorrhaphy, appendectomy for chronic appendicitis, and freeing of adhesions of the left tube and sigmoid. Symptoms were promptly relieved and the patient made a good recovery and left the hospital April 20.

While waiting for a car on an exposed corner the patient became chilled. Two days later she had a distinct chill, followed by fever and a dull aching pain in the left lumbar region. The next day Dr. Boynton saw her and found a large tender left kidney; at this time the temperature was 103 and pulse 120. Two days after this the right side was similarly affected. There was pus and colon bacilli in the urine. Dr. Boynton made a diagnosis of bilateral pyelitis. She was given intestinal and urinary antiseptics, and colonic irrigations. The condition persisted with exacerbations and remissions for six weeks.

June 8 she returned to the hospital and on June 12 and 14 I catheterized both ureters, obtaining from them urine with a moderate amount of pus and colon bacilli. Each time I irrigated the pelvis with 1:500 silver nitrate solution. In the next ten days the symptoms gradually improved, and she was able to leave the hospital June 26. After that she gained rapidly in strength and weight and became pregnant for the second time in October. She manifested no further urinary symptoms, and at the eighth month the voided specimen showed only an occasional pus cell.

Remarks: There were a few pus cells in the urine before operation, but as this was a voided specimen there is no certainty that they came from the urinary tract. The patient was catheterized twice after operation. It is possible that the chilling experience on the trip home may alone have accounted for the kidney infection, or may have produced a certain amount of renal congestion that would favor other factors. The apparent beneficial effect of the pelvic lavage is to be noted.

CASE 2.—Mrs. A. L., aged 33, was seen first in February, 1910. Menses began at 14, occurring regularly every four weeks; moderate in amount, with severe pains in the lower abdomen on the second, third and fourth days. Soon after marriage she became pregnant and had to be aborted on account of pernicious vomiting at the third month; this was nine years ago. The menses after this were scanty. Within a few months after the abortion she had appendix and both tubes and ovaries removed. She is not certain of the conditions that necessitated such an operation.

A week or ten days after the operation patient had a chill, rise of temperature, and pain in the abdominal wound, which broke down. Three weeks after operation the patient took a full bath; following this she had severe pain in the right kidney region for a week. At first there was some blood in the urine, and marked frequency of urination. The patient thinks she had a rise in temperature for a few days at this time. After this she did not feel well, and about every four to eight weeks she had attacks of pain in the right lumbar region, sometimes associated with vomiting and sometimes with temperature. Had frequent urination and moderate pyuria after the primary attack. I saw her first three years ago, when a diagnosis of colon bacillus of the right renal pelvis was made. As this did not clear up promptly under the administration of hexamethylenamin, I catheterized the right ureter and instilled into the pelvis half an ounce of 1 per cent. nitrate of silver solution. Since then she has never had any pain in the kidney region and the pyuria and the frequency of urination have disappeared. The patient has since been in better health than at any time after the operation.

CASE 3.—Mrs. A. G., aged 27, seen through the courtesy of Dr. Edward Pinkham, was admitted to the hospital Dec. 8, 1908. She had had two children and two miscarriages, all uneventful. Her menstrual history had been normal until the month before entering the hospital, and in this time she had flowed, off and on, for two or three days at a time, profusely. For the week just before entering she had no flow.

December 9 she was curetted and the uterus swabbed with tincture of iodin and phenol (carbolic acid). She was catheterized three times in the thirty-six hours after operation.

December 17 she complained of some bladder discomfort, and the next day of some pain in the back. On December 20 she was still complaining of pain in the back, and there was a sudden rise of temperature in the early morning to 101.8 F., which increased to 104 in the afternoon. At this time the pain in the back seemed to be more acute on the left.

December 21 I employed the cystoscope and found a slight cystitis. Both ureters were catheterized and from both was obtained highly colored, turbid urine, containing pus and pus cells, more from the left. The same results were obtained on December 22.

As the patient was not improving, on December 24 Dr. Pinkham cut down on the left kidney, which was large, congested and was dotted with many small infarcts. An incision was made through the cortex into the pelvis.

Blood-counts on December 26 showed 14,000 leukocytes, 80 per cent. polynuclears, 15 per cent. small lymphocytes, 5 per cent. large. On December 28 the count was 11,000 leukocytes, 70 per cent. polynuclears, 19 per cent. small, and 5 per cent. large lymphocytes.

Following the operation the patient did not improve, and ran a high temperature, which gradually fell to normal Feb. 3, 1909, and there remained.

Until January 21 there was marked albuminuria, with hyalin, finely granular, at times pus, casts and much pus in the urine. Even at the time of her discharge, January 30, there was a marked amount of pus in the urine.

She returned to the clinic after six weeks, when we found that she had pus coming from both kidneys. This was cleared up after a few nitrate of silver injections of the renal pelvis.

I have to thank Dr. Burton Harris for the report of the next two cases. They were included in his paper on renal infections which he read at the Boston meeting of the Urological Society.

CASE 4.—Mrs. M. W., aged 24, housewife, was seen in consultation with Dr. Charles Wuest and Dr. Rudolph Herriman Feb. 1, 1912. The records show that there had been an instrumental delivery of a normal child on Dec. 1, 1911. There had been no vesical or renal symptoms during pregnancy and the urine had shown no pus. A perineal tear had been immediately repaired. Catheterization was necessary for three weeks thereafter. One week after delivery she began to suffer from "chills and fever." The record states that there was no abdominal tenderness and that the heart and lungs were found normal. She had been under the observation of several physicians, who agreed on a diagnosis of post-partum septic endocarditis. The urine had shown a large amount of pus. Hexamethylenamin, 5 grains, was given every four hours from December 28 until January 17. Blood cultures were negative.

From December 28 until February 1 the temperature had ranged between 103 F. and 105 F., with marked morning remissions, and the pulse from 130 to 140, rather closely following the temperature curve. On February 1 the patient was septic in appearance and the mouth dry and foul; the temperature was 103 F. and the pulse 130 and of poor quality. We found no physical signs on which to base even a possible diagnosis of endocarditis. Examination of the abdomen was negative. There was moderate tenderness in both costovertebral angles. The bladder urine was acid in reaction and loaded with pus and bacteria. The blood-count showed 18,000 leukocytes, with 18 per cent. of polymorphonuclear cells. The blood cultures were negative.

Cystoscopy showed an intense general cystitis. No. 6 F. olive-tipped catheters passed easily to both renal pelves. The urine from the right side was acid, very turbid, contained a large amount of albumin and showed many epithelia from the convoluted tubules and renal pelves. Pus corpuscles and bacteria were present in abundance. Culture showed colon bacilli and *Staphylococcus aureus*. Their presence could not be ascribed to accidental contamination, for large clumps of cocci and bacilli were present in the fresh sediment of the urine obtained by the ureteral catheter. The urine from the left side was acid, somewhat less turbid but contained the same microscopic elements as that from the right. The colon bacillus was found in pure culture. On completion of the examination 10 c.c. of 10 per cent. argyrol was injected into both renal pelves and the patient kept in the Trendelenburg position for fifteen minutes. This was repeated on February 5, a 2 per cent. solution of argyrol being used. One-half c.c. of Van Cott's mixed vaccine was given on February 3, 7, 10 and 14. Her convalescence was uneventful. On March 1 the pus and bacteria had entirely disappeared from the urine, but the specimen continued to show albumin and occasional hyaline and granular casts and numerous epithelia from the convoluted tubules. At the time of her discharge on March 17 she was clinically cured and the urine showed no abnormalities.

Remarks: We have in this case a patient who had suffered from renal suppuration, mistakenly diagnosed as septic endocarditis. For more than a month the temperature had ranged from 103 F. to 105 F. I am of the opinion that a study of the chart shown in Figure 4 will convince the most skeptical that either the renal instillations, the vaccines, or probably both, had a beneficial influence.

CASE 5.—Mrs. M. N., aged 22, housewife, was seen in consultation with Dr. Armin Sibbel on Jan. 1, 1912. Ten years previously she had suffered from acute articular rheumatism and endocarditis. There had been a mitral systolic murmur and hypertrophy of the left ventricle since that time. The records showed that on Dec. 6, 1911, there had been an instrumental delivery of a normal child. The perineum had been torn into the rectum, but was immediately repaired and healed *per primam*. Repeated urinalyses made until the delivery had shown no abnormality, with the exception of a faint trace of albumin. Following delivery the urine showed a few pus corpuscles and red blood-cells for several days, but this rapidly cleared up and was attributed to trauma. The temperature, which had been absolutely normal, began to show an evening rise to 99.5 F. The pulse, which had been running between 80 and 90 before delivery, suddenly shot to 130 and ran from 100 to 120 until December 14, the evening pulse-rate being about 20 above the morning. When discharged from the hospital December 23 the temperature was 99.2 F., the pulse 100, repirations 20. She looked and felt perfectly well and the urine showed no abnormality.

On the evening of December 29 she was suddenly seized with a severe chill and lancinating pain in the region of the right kidney. Vomiting and dypsnea were marked features. Dr. Sibbel was called in the morning of December 30 and found the patient suffering from orthopnea and moderate cyanosis. There was marked edema of both legs. The temperature was 102.2 F., pulse 140 and irregular. She complained of a dull pain in the right kidney, the lower pole of which could be felt, and was very tender both anteriorly and in the costovertebral angle. Digalen and hexamethylenamin (urotropin) were given.

At 4 p. m. January 1 the cardiac conditions had improved, the pulse having dropped to 110 and being of fair quality, but the temperature was 103.5 F. The patient complained of a dull pain in the region of the right kidney, and there was moderate tenderness in the costovertebral angle. The urine was acid, turbid, and analysis showed a large amount of albumin. There were many epithelia from the convoluted tubules of the kidney and a few blood-casts. Pus corpuscles and red blood corpuscles were present in moderate numbers. Stained smears of the sediment showed bacilli in abundance, which on culture were found to be colon bacilli. Blood culture

by Dr. Holzman was negative. The leukocyte count was 12,000, with 88 per cent. polymorphonuclear cells.

Cystoscopy showed no abnormality in the bladder. No. 6 F. catheters passed freely to both renal pelves. The urine from the left side was clear and showed no abnormality. That from the right was turbid and showed the same chemical and cellular features as that from the bladder. The colon bacillus was found in pure culture. Phenolsulphonepthalein appeared on the left side six minutes after hypodermic injection; urea 0.021 per c.c. On the right side the dye appeared in nineteen minutes; urea 0.006 per c.c. Ten c.c. of 20 per cent. solution of argyrol was instilled into both renal pelves and the patient kept in the Trendelenburg position for fifteen minutes. A mixed vaccine 0.5 c.c. was given. On the following afternoon her condition was decidedly better, the temperature being 101; pulse 110. Both pain and tenderness were less marked. The vaccine was repeated January 3. January 6 the temperature was normal and the pulse 106. The edema of the legs had entirely disappeared. Renal pain and tenderness had quite subsided. The urine was clear but showed more than a trace of albumin, a few hyaline casts, many epithelia from the convoluted tubules of the kidney and a few pus and blood-cells. Weekly analyses of the urine showed traces of albumin with renal epithelia and an occasional cast for two months after the attack.

Dr. Sibbel reports that with the exception of occasional attacks of cardiac pain with the evidence of temporary failure of compensation, she enjoyed good health.

I was unable to make a further study of the functional capacity of the right kidney, as the patient refused instrumentation.

CASE 6.—The patient, A. D., was first seen on account of chronic urethritis in 1909, when she was 19 years old. She confessed masturbation. The appendix was removed because of constant pain and tenderness over McBurney's point, but with no relief. She was radiographed for renal and ureteral calculi but none were discovered. The pelvis of the kidney was distended with fluid after the method of Kelly and the pain of which she complained was reproduced and exaggerated.

In 1910 her right kidney was explored. It was found to be 4½ inches long, with almost complete atrophy of the cortex of the upper three-quarters. It was removed and she was relieved of the symptoms.

In 1911 she went to the City Hospital for chronic urethritis, and while there had several operations on nose and throat, and a laporotomy for tubal disease. Shortly after this I heard of her as a patient with marked polyuria, the amount being 200 ounces a day.

In August, 1911, I took her in the Post-Graduate Hospital, as she had had retention for five weeks. Catheterization six to eight times daily was necessary, and 20 to 30 ounces were obtained each time. On one occasion she attempted to catheterize herself with a pencil from which the lead had been removed, explaining the act on the ground that she was in discomfort from over distention and could not wait for the nurse. The urine was of low specific gravity, no albumin and the phenolsulphonepthalein elimination was normal. Through suggestion she was relieved.

On Jan. 15, 1912, I saw her again. She told me that two weeks previously she had allowed a girl friend, who wanted to be a nurse, to catheterize her, and that to stiffen a soft rubber catheter she had placed in it a hair-pin. The next day the friend confessed that the hair-pin had escaped into the bladder. This was evidently untrue, as the irregularly bent pin which I found with the cystoscope could not have been inserted in the catheter. This pin was finely coated with a white deposit of salts, and the bladder only slightly hyperemic. She did not allow me to remove it.

On Feb. 3, 1912, she called me and reported that the day before she had two chills, fever and pain over the right kidney. The urine contained a large amount of pus, hyaline and granular casts. On February 4, through a Kelly endoscope, I removed the pin. By February 8 the temperature fell to normal, and in a week the patient was discharged. This is not strictly a postoperative renal infection, but is reported as I believe that the pin caused wounds of the bladder mucosa, through which infectious organisms entered the circulation and caused the kidney infection.

On March 1, 1912, she inserted another pin in the bladder which now, May, 1913, shows only slight incrustation—the bladder is only moderately hyperemic. In March, 1913, she broke a needle in her hand.

For the histories of the next two cases I am indebted to Dr. George Gray Ward, through whose courtesy I am able to report them.

CASE 7.—Mrs. G. P. was operated on Aug. 26, 1908, for complete perineal tear and lacerated cervix, sustained in labor six weeks previously. The uterus was punctured accidentally with the curet and had to be repaired through an anterior colpotomy wound.

For the fifteen days following operation she ran a temperature from 99 in the mornings to 101 F. in the afternoons.

For the first nine days after operation it was necessary to catheterize the patient.

September 23, after nine days of normal temperature, with no apparent cause, the temperature was 100 F., and the same the next day. On the morning of September 25 it was 98.6 F., but rose by 4:20 in the afternoon to 103.4 F. September 26 it ran from 103.8 to 106 F., the low points being obtained with alcohol sponges. She began menstruating the next day, and then the temperature began to fall by steps and in four days reached normal, where it remained until October 8, the day preceding her next menstrual period, when it rose to 102.2 F. In two days it was normal and so remained.

She had no pain in the region of the kidneys. There were pus and pus casts in the urine and the colon bacillus was isolated by culture.

Treatment consisted in combating symptoms, and giving large amounts of water and hexamethylenamin. The patient made a good recovery and has since remained well.

Remarks: The patient was catheterized for nine days and had a rise in temperature for seventeen days after operation, indicating an infection. The late development of the renal condition and the possible association of the menstruation, as shown by two rises of temperature just before menstruation started, are to be noticed.

CASE 8.—Miss J. N., patient of Dr. George Gray Ward, Jr., was operated on, curettage, Gilliam shortening of round ligaments and appendectomy having been performed. She gave a history of two attacks of appendicitis. Catheterized twice after operation. August 31 she complained of painful urination, and on September 2 the bladder was irrigated.

September 3 the temperature rose to 100.6 F. and the next day to 102.8. From the fifth to the ninth it ranged from 99 or 100 in the mornings to 101 F. in the afternoons. On the tenth, coincident with menstruation, there was an accession to 103.8, and 104 the following day. The day afterward the temperature was 101, and in the succeeding days dropped to 99.5. There was an exacerbation on the twentieth to 101.6, and on the twenty-first to 103.6. From then the patient rapidly improved, the temperature came down to 99.5, and so persisted until the time of her discharge on October 1. There was much pus in the urine. At no time was there any pain in the region of the kidneys.

Dr. Ward believes that the renal infection in both these cases was an ascending one.

I am indebted to my brother, Dr. J. N. Furniss of Selma, Ala., for the next case.

CASE 9.—Mrs. T. B. M., resident of Tennessee, was admitted Feb. 20, 1913, suffering with an acute attack of chronic left salpingitis. First attack dates back four years following the birth of a child, at which time she was ill for several weeks with a pelvic inflammation.

Palliative treatment was employed until March 5, when the left tube, which was full of pus, and the appendix, which was bound down by adhesions, with a concretion about the middle, were removed. The patient was catheterized for

the first three days after operation. Five days after the operation the patient began to have painful and frequent micturition, with thick, ropy mucus in the urine. This condition cleared up in a few days under bladder irrigations and urethral applications of 20 per cent. argyrol. The general surgical convalescence was excellent, the wound having healed by first intention. March 26 there was rigor and temperature ran to 103 F., with intense pain in the right loin, radiating to the right iliac region. The urine contained pus, blood and bacteria and was acid in reaction. The temperature ran from 103 to 100 F. until April 6. Pain and tenderness were incessant during this time. From April 6 to 10 the temperature gradually returned to normal and the patient left the hospital April 28 with negative urine and relief of symptoms. The treatment used was stock colon bacillus vaccine and large doses of hexamethylenamin, 10 grains each four hours.

The report from this patient June 8 was that she was well and still gaining in weight at the rate of 2½ pounds a week since leaving the hospital on April 28.

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ABSTRACT OF DISCUSSION

DR. J. W. DRAPER, New York: About eighteen months ago Dr. Braasch and I cut a number of ureterovesical valves in the dog. The reason for doing so was to find out if it were safe to cut this valve in the human being. We had heard so much about the value of this so-called "valve" in preventing ascending infection and bladder reflux that Braasch and others hesitated to cut it. The experiment, briefly, was as follows: After opening the bladder in the dog, it was a simple matter to raise it so that either one or both valves could be cut with a delicate pair of scissors. A cubical piece of anthracite coal was rubbed in the dog's feces and introduced into the bladder, which was then closed. These animals recovered with reaction and lived without any apparent discomfort. They easily held their own with the rest of the pack. They passed what may rightly be called pus in the urine. It answered the clinical description of pus, in that it contained living organisms and immense quantities of leukocytes. The organisms did not penetrate deep into the bladder wall and the animals may, therefore, be said not to have had a true cystitis. We were never able to show that there was any infection whatsoever of the kidneys in these animals, and many of them lived for a number of months. Moreover, hydronephrosis did not occur; the real factor in reflux prevention being the physiologic activity of the ureters rather than the mechanical action of the valve. Since returning to New York I have repeated these experiments and have again been unable to find, either grossly or microscopically, that in this type of experiment on healthy dogs any such thing as ascending infection occurs. Our experimental findings are therefore in exact accord with the clinical studies of Dr. Furniss. The post-mortem studies have been carefully made. The results were reported before the section on genito-urinary diseases in Atlantic City in 1912. These studies led us to consider that it is safe to cut the valves in human beings, that ascending infection under these conditions did not occur and that stones lodged in the caudad extremity of the ureter could safely be removed by valve section and without laparotomy. Bleeding may occur, as in a case verbally reported by Dr. Furniss, but it should not be severe. Infecting the bladder in dogs, then, with one or both ureterovesical valves destroyed, will not cause renal infection or degeneration. It should be impressed on us all, nevertheless, that we must be careful in drawing conclusions from the case of the healthy dog and applying them to the sick human being.

Nature Refuses to be Pigeonholed.—Referring to a case of clonic spasms in a man which it was impossible to classify, Dr. Savill says: "It is one more illustration of the fact that Nature—whether in health or disease, it matters not—refuses to be pigeonholed."—Thomas D. Savill, in (London) *Clinical Journal.*

TWO AND ONE-HALF YEARS' EXPERIENCE WITH SALVARSAN AND NEO-SALVARSAN

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From laboratory experiments on animals infected with the syphilitic organism it was at first thought that a sufficient amount of the synthetic arsenic compound known as salvarsan might be administered at one time to cause a complete sterilization or destruction of the spirochetes in man; hence the name under which it was possibly not most ethically heralded to the world—*therapia sterilisans magna.*

Contrary to what was first supposed, however, we now know that one dose is not expected to cure a case of lues even in its primary stage. But the value of these compounds, which have been used so extensively during the past two or three years, has been sufficiently proved to warrant the assertion that Ehrlich has made the greatest advance in the therapy of syphilis since it was first noted, several hundreds of years ago, that luetics improved under treatment with mercury.

From clinical experience it has long been known that preparations of iodin, especially the potassium iodid, while useful in causing certain late lesions of syphilis to disappear, have little or no appreciable effect in causing the elimination of the disease itself; in other words, possess no curative properties. Salvarsan, on the contrary, while capable of causing all of the symptoms of syphilis to disappear, has also a marked curative effect. This has been repeatedly demonstrated in my own service and by others in observing the effect of the drug when administered internally on the spirochetes of the initial lesion. While salvarsan has a marked curative effect, yet better and quicker results are obtained when mercury is also given than when either drug is given alone, a point that has been especially emphasized by Neisser and others.[1]

As might be expected with any new and unknown remedy so widely used and of such a powerful nature, fatal and unpleasant effects have been noted. In this second series,[2] up to the time of writing 220 cases have been treated with salvarsan and neosalvarsan. The first ten cases were treated with salvarsan injected intramuscularly. Since then, up to about the middle of 1912, most of them were treated intravenously with the alkaline solution. Since then neosalvarsan has been used exclusively, as the solution is prepared more readily and the immediate after-effects have been nil, except as noted later. This drug has also been used quite a few times intramuscularly, but this method is sometimes painful and may leave large, tender, indurated masses in the buttocks of one or more weeks' duration, which renders it less suitable than the intravenous route. In fat persons and in small children, however, it is the procedure of choice. A small 3-year-old child was treated in my service, for an innocently contracted lues, by intramuscular injections of 0.15 gm. neosalvarsan with excellent results, the child complaining of no pain.

The solutions of neosalvarsan for intravenous injections have been prepared, for the most part, with freshly distilled, sterilized water, although in a certain number a 0.4 per cent. saline has been used. In a few

1. Neisser, A.: Moderne Syphilistherapie mit besonderer Berücksichtigung des Salvarsans, Carl Marhold, Halle, 1912.
2. Corlett, W. T.: Cleveland Med. Jour., December, 1910.

instances it was thought the water in passing through lead pipes after being distilled became contaminated and a Barnstead still was therefore installed in my laboratory. No ill results have been noted when water from this still was used. I think great care should be taken in every stage of salvarsan administration and that no one should attempt it without being thoroughly drilled and having suitable facilities at his command.

In the light of Milian's[3] recent report of a case of hemoglobinuria in a patient in whose treatment distilled water was used and in experiments on animals, it might be better to use the isotonic solution of neosalvarsan in a 0.4 per cent. saline water, although my own experience does not warrant this conclusion.

Most of the 220 patients treated have had three or four or even more injections. It has been a general rule with patients of average weight to give a first injection of 0.6 gm. neosalvarsan or 0.4 gm. of old salvarsan in men and 0.5 or 0.3 gm. in women, and if well taken to repeat in one week with a 0.75 gm. in women and 0.9 gm. (0.5 gm. and 0.6 gm. old salvarsan) in men, and once a week thereafter for at least two or three injections; after which there is usually a suspension of the arsenic therapy for several weeks or months. During this time advantage is taken of a course of mercurial treatment. I should like to emphasize the fact that in no case is the intramuscular administration of mercury, preferably in the form of gray oil, forgotten. Thus used in conjunction with mercury the results have been most excellent, not only in alleviating the patient's symptoms but also in regard to his general health as well as in the effect on the Wassermann reaction. The arsenic therapy seems to be of special value in primary and early secondary lesions. One injection of salvarsan will usually cause a practical disappearance of a primary lesion or of a secondary eruption. In some cases with old tuberculous lesions it works satisfactorily, then again shows little effect. In several cases of tabes and in one in particular, the results have been striking, so that the patient who formerly could hardly walk, has now thrown away his canes and gets around very comfortably. What the final results will be in some of these cases it is of course too soon to say.

With the first cases treated with the old drug there were frequently marked symptoms of gastric disturbance, chills, fever, headache, etc., but as time progressed the toxic qualities of the drug seemed to lessen so that during the first months of 1912 my patients showed few unpleasant symptoms from salvarsan. With the neosalvarsan the same absence of unpleasant sequelae has been observed. We are now giving dispensary patients intravenous injections, allowing them to rest for a time and then go home in a conveyance, if possible, and directing them to keep quiet until the next day or longer if necessary. We believe that this heroic combined treatment of clinical patients renders them innocuous to the community at the earliest possible moment. It has not been my good fortune, however, to maintain this favorable report in all cases, and I shall now take up these unfavorable experiences in detail.

REPORT OF CASES

CASE 1.—*History.*—The patient, C. Y. R., a merchant, aged 57, weight 165 pounds, stated that six weeks previously a barber had cut his upper lip with a razor and that some time afterward a sore developed on the spot and gradually increased in size. He had some headache and general malaise, but otherwise felt well. He was admitted to the hospital May 6, 1911. At the time of entrance there was a marked swelling and induration of the upper lip on the right side, while on the inner border there was a red ulcerated area. The cervical and submaxillary lymph-nodes were very much enlarged and quite painful to the touch. Naturally, lues was thought of, but inasmuch as the family physician had used calomel ointment locally it was impossible to find the *Spirochaeta pallida*, and a diagnosis of syphilis was not made until the appearance of the secondary eruption some days later. The patient was given an intravenous injection of salvarsan, 0.6 gm., May 15, 1911, which was followed by marked flushing of the face and an uncomfortable "bursting" feeling in the head for several hours. He returned home, however, eight days later, much improved and gradually resumed his business. About the middle of June, or three weeks later, the patient noticed that he was unable to move the right side of the face, including the eyelid, which drooped, and the lips, without some effort and pain. Otherwise he felt well and the primary lesion had entirely healed. The trouble was believed to be a Herxheimer reaction and the patient was directed to begin inunctions of mercurial ointment; the symptoms cleared up within a week. He was then advised to take a vacation and proceeded to a fishing camp in Canada. While there, about July 24, he began to have intense frontal headaches and pain in the back of his eyes, with at times almost complete loss of sight. With these symptoms hallucinations developed. He once more entered the hospital.

Examination.—At the time of entrance, Aug. 8, 1911, his general physical condition was good, but his sight poor, and an examination made at that time by Dr. B. L. Millikin was as follows: "Sight right eye, 6/24; left eye, 6/24-1. Both eyes tested with circles 1.5 cm. in diameter for white, red and green give a fairly good field in all directions and with proper relations to one another. The objects grow brighter as the fixation point is approached for colors and white, showing no scotomas. Ophthalmoscopic examination shows the media all clear, pupils rather small and reacting promptly to light and accommodation. The disk is round, good sized, broad central physiologic cup. There is a slight pigment ring. The arteries and veins are both good sized and normal in distribution and not tortuous. The temporal half of both eyes shows somewhat pale, but no marked striations."

Treatment and Course.—The patient was not given salvarsan because of the hardened condition of the arteries and the marked reaction he had shown, but was immediately put on daily injections of mercury biniodid ¼ grain and later mercury chlorid from ⅛ to 1/6 grain. He was discharged September 20 much improved and since then has had mercury salicylate injections at regular intervals and is doing well.

Diagnosis.—"Herxheimer reaction followed by neurorecurrence," following chancre treated with salvarsan. Recovery.

CASE 2.—*History.*—The patient, J. H. D., was an illustrator, aged 29, weight 137 pounds. The personal history is negative aside from a luetic infection of seven years' duration, for which the patient had taken large amounts of mercury by the mouth, but for two or three years this treatment had not reacted well. He was troubled with ulcerations of the throat which were very obstinate in healing.

Treatment and Course.—Being consulted by his family physician I advised the use of neosalvarsan. The patient received an injection of No. 4 (0.6 gm.) neosalvarsan intravenously, Nov. 17, 1912. He reacted well and went back to work the next day. Seven days later the patient received a trifle less than No. 6 (0.8 gm.) neosalvarsan intravenously. Shortly afterward he was taken with paroxysms of vomiting which continued all night and the next morning. Through some error the patient was allowed to go home although still vomiting and having a temperature of 101.5 F. During the next two days the vomiting continued and the patient had severe chills and fever with twitchings of the muscles. I was notified of his condition on the third day after his injection when he had a temperature of 102.5 F. He was perspiring copiously and was in an almost continuous chill with marked chattering of the teeth. As it looked like an infection the patient was removed to the hospital at once where a blood-

3. Milian: Bull. Soc. franc. de dermat. et de syph., December, 1912.

culture was made and found to be sterile. At that time a blood-count showed 8,000 leukocytes. The next day the patient was somewhat improved and was able to take some liquid nourishment, but his body was covered with a general erythematous eruption and an extensive herpes had appeared on the right cheek. On the sixth day he complained that his left leg was helpless and that his body was numb below the waist-line.

First Examination.—Nov. 30, 1912: Heretofore the patient had been restless and vomited so much that a careful physical examination was impossible until to-day, thirteen days after arsenical treatment. The skin is of a reddish, somewhat erythematous hue. No jaundice, anemia, edema or cyanosis is observed. There is a herpetic eruption on the right cheek, as previously noted. The conjunctivae are somewhat injected, but the movements of the eyeballs are normal in all directions. There is no ptosis, strabismus nor nystagmus. The palpebral fissures are equal on the two sides. The pupils are irregular and the reaction to light and accommodation is sluggish. The tongue is coated and tremulous, but protrudes in the median line. The right posterior pillar of the fauces is bound down by old cicatricial adhesions. The heart and lungs show nothing abnormal, nor does the abdomen reveal any enlargement of the liver or spleen. The patient is unable to move the thighs, legs, feet or toes, although as yet there is no atrophy of the muscles noted. The knee-jerks are present, of normal intensity and equal on the two sides. The ankle-jerks are very difficult to obtain and there is no Babinski phenomenon. The biceps, triceps and supinator longus reflexes are all present and hyperactive, but equal on the two sides. The pain, temperature and epicritic senses are lost below the distribution of about the tenth dorsal nerve segment and there is some tenderness over the nerve trunks. The vibratory sense is present in both lower limbs. To-day the patient complained of some fulness of the abdomen and examination revealed a full bladder and on catheterization forty ounces of urine were removed. It was found necessary to catheterize the patient four times a day thereafter for several weeks. The urine showed a slight trace of albumin, a few white blood-cells, together with granular and hyaline casts.

Record by Days.—Dec. 1, 1912: The patient is much worse. There is a marked puffiness of the eyelids and face and he complains of pain in the joints, and a marked loss of strength in arms and hands. There is a loss of sensation below the innervation of the eighth dorsal nerve segment and the pain sense in the upper extremities is diminished. The knee-jerks have disappeared and the biceps, triceps and wrist-jerks have notably diminished since yesterday. A lumbar puncture was done and 6 c.c. of clear fluid removed under no pressure. The pipet count was normal and arsenic was detected in both the urine and spinal fluid by Dr. J. J. Pilcher of the pharmacology department of Western Reserve University.

Dec. 5, 1912: Patient is markedly jaundiced and has a slight decubitus on the right side; stronger in the arms but still unable to move the legs.

From this time on the patient began slowly to improve, the reactions to electricity, etc., varying somewhat from time to time. The jaundice cleared up about December 18 and January 1 the urine began to run of itself, but the patient was unable to control it. As the Wassermann reaction was strongly positive he was put on daily injections of mercury bichlorid one-fifth grain and about the middle of January he began to be able to move the thigh and leg muscles of the left leg and wiggle the toes of the right foot.

Second Examination.—By Dr. C. W. Stone of the neurologic department of the Western Reserve University, Feb. 2, 1913: Plantar stimulation of the left foot causes plantar flexion of the great toe with dorsal flexion of the second and third toes and plantar flexion of the fourth and fifth toes. Oppenheim and Schaeffer tests cause some reaction. There is a positive Mendel (Bechterew) on the left foot and no Babinski on either side, although suspicious on the left. The patellar reflexes are present, active and equal on the two sides. Ankle-clonus present on both sides, but more so on the left. Ankle-jerk is present on both sides. There is a dermatographia on both sides of the abdomen.

Sensation: Temperature as follows: Above the knee he perceives both heat and cold on the right leg and also below the knee for the upper two-thirds on the inside and upper one-third on the outside. In these areas it is uncertain, but below them neither is perceived. On the abdomen both hot and cold are distinguished above the umbilicus and below it on the right side, but both are uncertain on the left side below the navel. On the entire left leg both heat and cold give a sensation of warmth.

Pain: Complete analgesia of entire left leg, although patient feels touch of the pin but no pain. The pain sense is distinctly less on the right side below the middle of the thigh and becomes increasingly less as one approaches the foot.

Vibration: The vibrations of the tuning-fork are perceived in both legs, and on both limbs equally well.

Touch: Probably no diminution in the touch sense. Usually the brush feels the same on the legs as on the trunk though sometimes less. There is no disparity in the acuteness of the two sides.

Electrical Reactions: Galvanic. Quadriceps with a current of eighteen milliampères does not respond to KCC but does to ACC. It is better on the left than on the right side. The vastus internus with the same current responds to ACC, but not to KCC on the left side. Tensor fasciae femoris — ACC is greater than KCC on both legs, but KCC is absent on the left leg with 25 milliampères current. Peroneals — ACC is greater than KCC on both legs though KCC is present in both limbs.

Faradic Current: The quadriceps respond on both sides, but only with a strong current on the right side. The peroneals, gastrocnemii and solei all respond promptly.

Progress of Case.—Feb. 24, 1913: The patient is slowly but steadily improving. The decubitus is gradually closing in and the patient is around in a wheel-chair.

March 15, 1913: The decubitus is entirely closed in and the patient discharged. He has been taking daily injections of mercury biniodid one-fourth grain for a long time and his Wassermann reaction is now negative. Patient instructed to have daily massage at home.

April 8, 1913: Patient has been visited weekly and he is improved slowly. He finally is able to control the bladder and can now stand on his feet.

Diagnosis.—Arsenic intoxication due to idiosyncrasy or more probably to lack of elimination.

CASE 3.—Miss E. F. G., patient with a luetic history, was referred by her family attendant for treatment by salvarsan. At the time of admission she was extremely nervous and had headache, but was otherwise well and weighed 106 pounds.

Treatment and Course.—Feb. 2, 1913, she was given an injection of No. 4 (0.6 gm.) neosalvarsan intravenously. The next day the patient began to complain of increased headache, general malaise and loss of appetite while she had a temperature of 102 F. with a pulse of 110. These symptoms kept up until February 6, when the patient had a temperature of 104 with a pulse-rate of 110 to 120, a slightly injected throat with a white blood-count of 3,000 and an enlarged and tender spleen. Otherwise the examination revealed nothing and a blood-culture was done. The next day the continuous fever began to drop and the patient felt better despite the fact that on February 8 the spleen was still enlarged and the white blood-count was 4,000. The blood-culture was negative. Patient was discharged February 11, well, the urine having shown nothing at any time.

CASE 4.—Miss L. S., aged 21, weight 112 pounds, presented a small node-like protuberance on the anterior surface of the tibia of one year's duration, the nature of which was obscure. Previous history was good; patient's father died at 35 of pneumonia. The patient had been treated with potassium iodid but the discomfort continuing, the case came under my care.

Treatment and Course.—As two Wassermann tests at different times and by two competent serologists showed a positive reaction she was given on May 17, 1912, 0.45 gm. neo-

salvarsan intravenously. This was followed by severe reaction and a marked jaundice occurred on the third day. This disappeared in a few days and the patient returned home. No change in the nodule was observed. Two weeks later a second administration of No. 4 (6 gm.) neosalvarsan was given without untoward symptoms but without producing any change in the tumor notwithstanding that neosalvarsan was alternated with mercury.

In two other cases a slight jaundice has followed the use of salvarsan. In one case of pemphigus foliaceus, 0.4 gm. salvarsan intravenously was followed by no appreciable results.

FATALITIES REPORTED FOLLOWING USE OF SALVARSAN

Up to last November about 600,000 ampules of neosalvarsan and 3,000,000 of salvarsan[12] had been sold. Naturally with such a powerful drug, used in such a large number of cases, we must expect some unpleasant results; as nearly as can be ascertained about 124 deaths have been authentically reported to March, 1913.

In this country two other deaths, undoubtedly overlooked by foreign writers, have been described by Ruh[18] and Newmark.[9] These statistics do not include many other deaths in which physicians have not reported from fear of unpleasant results, imagined reflections on themselves, etc. Placing the deaths at 200, there has been about one death for each 2,000 injections, but, as we shall see, some of these should be omitted as they are thought not to be due to salvarsan.

FATALITIES DIRECTLY DUE TO SALVARSAN

From the symptomatology of these fatal cases they appear to belong to several types, more or less shading into one another. A few have been described in which the patient dies suddenly after the injection, having shown few or no symptoms. Probably the most common, however, is that of a subacute type coming on in a day or so with headache, weakness, vomiting, often incontinence of sphincters, coma, dyspnea, cyanosis and death in from three to four days. In this type one generally finds a serous meningitis and often some small ruptured vessels at the base of the brain. The French have reported this finding several times and say that often no other lesions are to be found.

In some of the cases, of which the one described by Ruh[18] can be taken as an example there is a total or partial suppression of urine, with albuminuria, hematuria and death. In the one reported by him the patient, five days after having had an intravenous injection of salvarsan, died from anuria and toxic symptoms of uremia. He found at necropsy evidences of a severe intoxication present mostly in the kidneys and liver, which showed degenerative changes and proliferation of the parenchyma—these changes being similar to those produced by experimental arsenic poisoning.

Busse and Merian's[19] case was also much like this and necropsy showed cerebral edema with hemorrhages, thromboses and inflammatory lesions in the white substance of the brain and cord. There was also an acute nephritis and hemorrhagic lesions in several organs. They concluded that their case was an acute arsenic poisoning as the kidneys showed extreme degeneration of the parenchyma with swelling and desquamation of the glomerular epithelium. The spleen also showed swelling of the pulp with hemorrhages and beginning areas of necrosis. Lesser[20] and later Lube[17] call attention to the presence of convulsions in some of the cases. In twelve of Lesser's eighteen cases the convulsions came on shortly after the injections and nine of these patient died; while in the other six the convulsions appeared later. Thus in one case eight weeks after the third injection the patient was suddenly seized with epileptic attacks lasting a short time. Later this patient had several injections of salvarsan but with no symptoms following.

Concerning the cause of these postoperative troubles it may be best first to give a brief survey of the opinions of different men after which they might be taken up more in detail. Emery[21] has during the past year been working on the influence of contaminated water on the organism when intravenous injections are given. He finds that even infinitesimal quantities of copper and lead in freshly distilled water are liable to cause toxic symptoms and he advises the use of Jena glass for the distilling apparatus so that none of these salts will be dissolved out by the water in the process of distillation.

Coming now to the question in detail, there is one class of ill results appearing very acutely after the injection, which can be explained as an acute arsenic poisoning and on that basis alone. Ruh's case was such a one and Busse and Merian's another. Darier's two cases can be explained most easily under this heading and unquestionably that of Wolff and Mulzer's; in fact, they admit it themselves. Hallopeau[23] feels, from his experience, that alcoholism predisposes to arsenic poisoning due to the changes in the liver and in his case he believes this had much to do with the fatal result.

It has been found by different investigators that the bulk of the neosalvarsan is excreted in the first three or four days and of course anything hindering this excretion, for example, cirrhosis of the liver, would predispose to an intoxication on the taking of the second dose. Wechselmann[24] believes the bad results are due to a retention of the drug in the blood from some cause and it may be that this took place in Case 2 of my series. Be that as it may, the recent work of von Marschalkó and Veszprémi[25] shows quite conclusively that the tolerated dose of 0.01 gm. salvarsan, 0.015 neosalvarsan, per kilogram, as determined by Hata for animals, is much too high. Animals receiving 0.015 per kilo died in several hours and those receiving from 0.011 to 0.012 gm. per kilo in two to two and one-half days. The necropsies showed the exact analogy with the so-called meningoencephalitis so much emphasized by the French—dotted hemorrhages at the base of the brain, stasis, hyalin thrombosis, and hemorrhages without inflammation. These findings have also been lately amplified by these men in another place. They find when less than 0.008 gm. per kilo is injected the animals always live. They conclude that all the deaths can be explained on the basis of an arsenic intoxication and in a later paper[26] urge that the dose of 0.4 gm. should never be exceeded.

According to some men these "neurorechutes" or "recidives" are seen most frequently in cases of cephalic chancres as in Case 1. Desneux and Dujardin[30] on Bayet's service saw seven cases of "neurorecidives" after cephalic primaries and they usually began with intense

12. Darier, J.: Bull. Soc. franc. de dermat. et de syph., November, 1912.
19. Busse and Merian: München. med. Wchnschr., 1912, No. 43, p. 2330.
20. Lesser: Berl. klin. Wchnschr., 1912, p. 593.
21. Emery: Bull. Soc. franc. de dermat. et de syph., Nov. 7, 1912.
23. Hallopeau: Gaz. d. hop., Feb. 15, 1912.
24. Wechselmann, quoted by Darier; see Note 12.
25. Von Marschalkó and Veszprémi: Orvosi hetil., 1912, Nos. 23 and 24.
26. Von Marschalkó and Veszprémi: Archiv. f. Dermat. u. Syph., 1913, cxiv, 589.
30. Desneux and Dujardin: München. med. Wchnschr. 1911, No. 23, p. 1245.

headache, as Werther and Benario[31] have already noted. They started in from one to four months after the injection, at a time when practically the last remnant of arsenic had been excreted, and these men considered that the cases were exclusively luetic in origin.

As to their true causation there is still some difference of opinion. Some believe they are due to a toxic action of the salvarsan on the nerves, while others think they have nothing to do with salvarsan. Again others believe that while they are of a luetic nature, yet the salvarsan, in its action on the nerves, has caused a *locus minoris resistentiae*. Still another group of observers, headed by Ehrlich himself, believes that they are due to the progressive germination of a few unkilled spirochetes. Neisser takes the ground that the salvarsan therapy has nothing to do with the "neurorecidives" except in this way—that in some persons, unfavorably influenced by the arsenic therapy, these nerve lesions come on earlier than they would otherwise. Benario has attempted to show that the same ill results were noted, and as frequently, after the use of mercury as after the beginning of salvarsan therapy. In concluding this consideration it seems evident that the "neurorecidive" or "neurorecurrence" is of a luetic nature, but it is hardly to be doubted that the salvarsan plays an important rôle both as to time and character of its appearance.

ACCIDENTS CLASSIFIED

Accidents following the use of salvarsan may be classified as follows:

1. Those coming on very shortly after the injection with symptoms of an acute intoxication and necropsy findings of serous meningitis, hemorrhages, and frequently lesions of the kidneys and liver, lesions such as one finds in experimental arsenic poisoning.

2. Those coming on in from two to four days with symptoms of nerve paralyses, at times deafness, dizziness, poor hearing and even loss of consciousness, due to the Herxheimer reaction. It is explained by the killing of the spirochetes with consequent loosening of their toxins, and resultant edema and swelling of the parts affected, causing severe damage in such uncompressible tissues as the brain or nerves running through an osseous foramen.

3. Those coming on within from several weeks to months after the injection with symptoms of nerve paralysis and to be classed (1) as a "neuro-exacerbation" or "neurorechute," in which there is the lighting up of a hidden process already working or (2) as a neurorecurrence "neurorecidive," in which there is a genuine starting up of a new lesion. Both these processes while luetic in character are associated with the arsenic preparations at least as to time and mode of their appearance.

CONCLUSIONS

I do not wish to convey the idea that the use of salvarsan is to be discouraged. On the contrary, I believe that when the drug is properly used and by experienced persons it is a most valuable weapon against the *Spirochaeta pallida*. To insure against untoward results, however, one must exercise care as to the selection of cases and after ascertaining that no physical disqualification exists, one should further exercise care in not giving too large doses. From my experience, I would advise that treatment be begun with a small dose and gradually worked up by succeeding injections not to be given oftener than once a week. Great care should be taken as to the purity and sterility of the distilled water. The reaction of the patient should be carefully watched and, if very severe, further injections should be given with exceeding care. In cases of cephalic chancres one should institute salvarsan therapy with the greatest caution. If these precautions are taken, the result will be with rare exceptions most gratifying and, if the drug is used in conjunction with mercury, the result will be much quicker and surer than with either alone. Again, there are many obstinate cases that will react only to this combined line of treatment. As to the relative therapeutic value of the old and the new salvarsan I have been unable to detect any difference.

Finally, every physician having had accidents from the use of salvarsan should consider it his duty to report them, for in this way only can we arrive at a fuller and better knowledge of this the last great stride in overcoming syphilis.

3618 Euclid Avenue

31. Benario, J.: Neurorecidive nach Salvarsan und nach Quecksilberbehandlung, ein Beitrag zur Lehre von der Frühsyphilis des Gehirns, München, 1911.

A SIMPLE TOURNIQUET

F. D. AUSTIN, M.D., CHARLOTTE, N. C.

This device is made of a piece of ordinary rubber tubing and a clamp from a fountain syringe. The illustration shows the details, making a description unnecessary.

GOLF-BALL BURN OF EYE

H. E. THOMASON, M.D., KANSAS CITY, MO.

E. F., boy aged 13, in February, 1913, thrust his knife into the center of a golf-ball. Out spurted a liquid directly into the right eye. Dr. Lee Haynes, who was summoned, sent the boy directly to my office; he arrived about two hours after the accident. There was marked swelling of both conjunctivae, so that the lids were everted. Cornea was milky-white; only light perception was present. There was agonizing pain, for which a 4 per cent. solution of cocain was instilled. Patient was sent to South Side Hospital with instructions to use 1 per cent. solution of atropin sulphate, sterile olive oil and cold application, followed in twenty-four hours with hot. On third day I noticed a detachment of both palpebral conjunctivae. This I allowed to remain to prevent symblepharon while a new one formed. The conjunctiva was removed on the tenth day. The epithelial layer of cornea sloughed on the fourth day and was removed.

The result so far I consider good as there is only a slight symblepharon at outer and inferior angle of the eyeball. Vision unaided 20/40 with a sphere plus 1 20/30. There is a small leukoma on cornea at inner canthus. An ointment of 5 per cent. dionin has been the principal treatment since the acute symptoms have subsided.

317 Argyle Building.

What Is Courage?—The bravest men are not those who are insensible to physical fear, but those who master it by courage of spirit; the purest and noblest are not those who have never felt the temptations of the body, but those who have resisted them.—*The Outlook.*

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SATURDAY, SEPTEMBER 20, 1913

HAVE SPERMATOZOA OTHER FUNCTIONS THAN THAT OF FERTILIZATION?

Our widening view of the possibilities and omnipresence of immunity reactions in physiologic as well as pathologic processes gives us an understanding of the significance which may lie in a recent study of Kohlbrugge of Utrecht on the fate of spermatozoa in the female organism and their potential influence on both mother and offspring.[1] The prevailing idea has been that of the millions of spermatozoa introduced into the mammalian female — about two hundred million in the human — one single spermatozoon, more active or more fortunate than the rest, reaches the goal and becomes immortalized in a new being, while all the rest die and pass out through the route by which they have entered. It has been known to the zoologists that in at least some of the invertebrates the spermatozoa invade the entire body of the female, penetrating even the viscera, and sometimes perforating the cuticle from the outside to reach by this direct route the genital tissues. In some species, furthemore, it has been observed that not merely a single spermatozoon, but many spermatazoa, may enter the ovum.

At one time there did exist a belief, founded purely on speculation, that the spermatozoa of the mammal invaded the entire generative tract, and perhaps the entire body of the female; but this idea was current over a century ago, and entirely discredited in more recent times. Now Kohlbrugge has found evidence which seems to indicate that perhaps the ancients guessed better than their descendants reasoned. He has detected in such mammals as mice, rabbits, bats and in some other vertebrates the spermatozoa invading all the folds of mucous membrane in the uterus and tubes, penetrating the epithelium and invading the underlying connective tissue. He has also observed that they may enter the developing ovum for some time after the first stages of multiplication of the impregnated cell. The observed and possible effects of these activities of the spermatozoa are many. The cells of the uterine mucosa which have been entered by the sperm seem to be stimulated to growth, indicating that this may be a factor in the preparation of the mucosa for the embedding of the egg and the formation of the decidua. It is also possible that these foreign cells entering the tissues may lead to immunologic reactions of significance, such as the occurrence of corresponding diatheses in husband and wife, the reputed resemblance which develops in married couples, not only in psychic, but also in physical characteristics, and possibly other yet undetected biologic interrelationships. This is an almost untouched field which may yield important results when once worked over.

The entrance of additional spermatozoa into the fertilized egg may also have important results. Possibly they confer added stimulus to normal growth, or lead to abnormal developmental changes of importance for teratology; or, again, they might introduce either nutritive substances or pathogenic agents into the egg. In case of spermatozoa coming from a different male than the one who fertilized the ovum, there are unlimited possibilities to be imagined in the way of adding characteristics of the second male, or modifying the growth of the ovum through its reaction to alien sperm, etc. It would also be possible in this way for diseases to be present in the child which were not acquired from either of the actual parents. The simple observations of Kohlbrugge are of such a character as to stimulate speculation leading into remote fields; so much so, indeed, as to obscure the fact that they are as yet unconfirmed, and that the results ascribable to the wandering spermatozoa are entirely hypothetic. Even if the male elements do invade the female tissues and the fertilized and growing egg, it does not necessarily follow that any effects of importance result therefrom; but the process of generation is so mysterious that any new suggestions are bound to lead to extravagant speculation.

1. Kohlbrugge, J. H. F.: Die Verbreitung der Spermatozoiden im weiblichen Körper und im befruchteten Ei. Arch. f. Entwckingsmechn., 1912, xxxv, 105.

IS ALCOHOL A FOOD?

It has been extremely difficult in the past to approach the subject of the value of alcohol to the human economy in a way that would lead to an entirely dispassionate estimate of the part which it may play. The question is unusually complex because alcohol may affect the body physiologically or pharmacologically in a variety of ways quite apart from its possible rôle as a nutrient substance. The reply to an inquiry on the subject is likely, therefore, to be tinged with the impressions that are left by the particular aspect of the subject under consideration, sometimes without regard to other equally important considerations. The physician looking primarily for certain immediate responses which he desires to accomplish in a diseased organism may, for example, tend to overlook other more remote effects seemingly unrelated to his immediate interest. One writer will thus emphasize the beneficial features of the use of alcohol; another may with equal readiness see only its detrimental aspects. Again, an investigator, impressed with the dire

consequences for which alcohol may be responsible in relation to the nervous system, may utterly overlook the ready oxidation of alcohol in the organism and the physiologic possibilities suggested thereby in respect to energy utilization. Questions of dosage are clearly appreciated in any discussion of the action of drugs; and every therapeutist well realizes that small amounts of toxic compounds, like arsenic or strychnin, may exert most beneficent effects under appropriate conditions. The discussion of the subject of alcohol, however, is all too frequently so pervaded with passion and partisanship that the open-minded student finds himself embarrassed in attempting to steer a safe course between bias on the one side and ignorance on the other.

In 1902 Atwater and Benedict furnished a notable contribution to the physiologic aspects of the alcohol question.[1] They investigated the influence of "moderate" amounts of alcohol on man—quantities equivalent to what would be supplied in a bottle of claret or in 6 ounces of whisky. It was clearly and conclusively shown that 99 per cent., that is, practically the entire amount, of such intakes of alcohol per day were actually oxidized in the body. The proportions of food and the several kinds of nutrients digested and made available for use in the body were practically the same in the experiments with and without the alcohol in the diet. In every case the law of conservation of energy was obeyed. The potential energy of the alcohol (which yields about 7 large calories per gram) was transformed into kinetic energy in the body as completely as that of ordinary nutrients, and ultimately left the body as heat, precisely as is to be expected. But more striking than these generalizations was the fact, clearly brought out by Atwater and Benedict, that alcohol is efficient in the protection of the body-fat from consumption. There was no evidence, from the point of view of energy, of any considerable difference between the alcohol and the isodynamic amounts of fat and carbohydrate which it replaced. The efficiency of alcohol in protecting body protein, though evident, was not equal in this respect to isodynamic quantities of the ordinary nutrients.

These experiments show that alcohol is burned up in the body like the other foodstuffs, but they by no means thereby prove that its energy may appear in the form of muscular work as well as heat. Herein lies a distinction frequently overlooked by those who are not thoroughly conversant with the subject of metabolism. A compound may be burned up and its energy completely converted into heat. But the living organism requires more than heat; part of the energy furnished to it must at some time be capable of conversion into movement—into muscular work—if the functions of the body are to be carried on. It has often been urged by the partisans of the anti-alcohol propaganda that alcohol can never function as a true nutrient because, granting that it can be oxidized in the body, its energy is never transformed into muscular work. At best, they remark, it furnishes useless heat to an already overheated organism. The classic experiments of Atwater and Benedict do not prove that alcohol may furnish the energy of muscular work, even though they make it "highly probable."

We often hear the statement made that the "alcohol calories" fail to serve any useful end when they are burned in the body. We are told that alcohol, in any amount whatever, is a poison. Poisons do not become essential integral parts of living cells; so that on this basis one may conclude that the calories represented by alcohol appear merely as waste heat without furnishing to the economy anything of real advantage when such a "poison" is burned therein.

Durig[2] of Vienna, a competent student of the problems of metabolism, has again approached the question of the extent to which moderate amounts of alcohol can really supplant carbohydrates in nutrition. He selected conditions presumably particularly favorable to the preferential use of the carbohydrate in the metabolism, in case the organism were really not adapted to the satisfactory utilization of alcohol. The subjects were given large amounts of sugar with and without the addition of alcohol. The experiments were so planned that if the combustion of alcohol merely leads to waste heat its products would be added to that of the sugar which was always available in abundance. The results seemed to show that there was no waste under these conditions. Despite the surfeit of sugar available it was spared from destruction for liberation of energy by the alcohol which was burned to replace the carbohydrate. It is sometimes asserted that such conservation of foodstuffs when alcohol is ingested is due not to an actual replacement of nutrients, but to the toxic inhibitory effect of the alcohol whereby all the metabolic processes are decidedly diminished. Nutrition is represented as being in a sense paralyzed. This view is combated by Durig.

In emphasizing these facts regarding the behavior of alcohol in nutrition one cannot point out too emphatically that they do not commit us to the dictum that alcohol is an excellent or even an advantageous food. To say that alcohol may be a food is not to deny that it is a dangerous one. If it is given too freely its oxidation is incomplete and, what is more important, the untoward nervous effects become prominent. In ordinary conditions of health there is no occasion for the use of alcohol, and its introduction into the regimen of daily life can scarcely be defended on the grounds of nutritive needs. Dr. Meltzer has said that "alcohol in health is mostly a curse and in sickness mostly a blessing." The conscientious physician is entitled to know the truth in regard to it. His prescription of alcohol should be based on a clear conception of its action and its limitations.

1. Atwater, W. A., and Benedict, F. G.: An Experimental Inquiry Regarding the Nutritive Value of Alcohol, Mem. Nat. Acad. Sc., 1902, vii, Sixth Memoir.

2. Tögel, O.; Brezina, E., and Durig, A.: Ueber die Kohlenhydratsparende Wirkung des Alkohols, Biochem. Ztschr., 1913, 1, 296.

"NATURAL" AND SYNTHETIC SALICYLATES

From the title of the Council on Pharmacy and Chemistry the natural but erroneous inference is probably drawn that it deals with laboratory matters exclusively, questions of therapeutics which must be answered at the bedside not being considered. The fact that laboratory investigation has often sufficed to fix the status of a preparation, the chemical evidence of its fraudulent character being sufficient to warrant no further investigation by the commission, is to a great extent responsible for this mistake. Questions of composition and pharmacologic qualities are determined by chemical analysis and animal experiments. Laboratory experiments must decide whether the claims are true or false. In some instances, however, laboratory investigations are not sufficient and attempts must be made clinically to show the true therapeutic worth of the product. In such cases, if the matter requires wider investigation than can be given by its clinical members, the Council submits the question to its Staff of Clinical Consultants, whose experience and judgment are acknowledged, and they determine whether or not the clinical evidence submitted is sufficient to sustain the therapeutic claims made. In this way every phase of the questions submitted to it is settled by the Council.

Some time ago the Council on Pharmacy and Chemistry authorized a cooperative investigation of a question which has long been disputed without conclusive results: Are the "natural" salicylates superior in any way to the synthetic products? The various steps of the investigation are reviewed in the report of the Council in this issue.[1] They involve, first, a chemical examination of the product; second, a pharmacologic examination, and third, a critical survey of the literature. The chemical examination of the products on the market showed no chemical difference between the natural and synthetic salicylates; the pharmacologic examination showed no difference in the action of the products; an analysis and critical survey of the whole literature on the subject showed that from previous studies there is no ground for the conclusion that the natural salicylates are superior in any way to the synthetic. With these preliminary data, it was justifiable to proceed to the clinical investigation. This was planned so as absolutely to avoid the factor of personal bias which has wrecked many similar investigations. A large number of clinicians, including many who had decided opinions on the question, were invited to participate, with the condition that they should not know the origin of the different samples used by them until after they had rendered their reports. A sufficient number responded to make the results representative. The conclusions are decisive and unmistakable. No investigator could distinguish which of the powders supplied to him were natural and which were synthetic. The collective tabulation showed that the natural and the synthetic products give almost mathematically the same percentage of therapeutic results, in fact, in all the phenomena recorded.

The question would certainly seem to be decided: Natural salicylates are in no way superior to synthetic salicylates. The value of cooperative clinical investigation of this and similar questions is well illustrated by these investigations. The decisive result of the report is due to the willingness and enthusiasm of the investigators, who deserve the highest credit and thanks for their collaboration with the Council.

1. See page 979

A VIEW OF ANESTHESIA

Broadly speaking, the term "anesthesia" may be used to designate any temporary or reversible lowering or loss of the vital responsiveness, or of the normal automatic vital activity, under the influence of certain artificial substances or conditions. This property of complete reversibility, whereby the normal activities of the organism may completely return when the influence of the anesthetic has passed off, distinguishes it clearly from those irreparable losses of physiologic power which are allied to death. It is only natural that so unique a manifestation should incite investigation of the inherent nature of anesthesia. Consequently there have been various theories of anesthetic action.

The fundamental factor in anesthesia is a loss of what biologists term the irritability of cells or tissues. They no longer exhibit a characteristic response to stimuli to which response is ordinarily obtained. It would lead us too far to take into consideration here the many conditions which are known to alter or abolish the irritability of an organism. Modifications of temperature, certain electrical currents, fatigue and mechanical shock are among them. Irritability may be more easily modified, however, by the use of chemical substances than by any other means; and for the medical investigator interest here centers chiefly in a group of largely unrelated substances called anesthetics by the physician.

Many of the anesthetics are soluble in fats and fat-like compounds (lipoids) and likewise dissolve them. The Meyer-Overton theory of narcosis propounded a few years ago holds that there is a relation between the lipoid-solvent power of a large number of organic anesthetics and the intensity of their narcotic power; according to this the chief factor in determining the action is the coefficient of the relative solubility of the anesthetic in water and in lipoids, such as the nervous system contains in great abundance. In other words, for any series of fat-soluble compounds the narcotic action increases as the lipoid solubility increases and the water solubility decreases.

The view whereby this form of anesthetic action depends essentially on a modification of tissue lipoids has received wide-spread attention. There is much left undetermined thereby with respect to the further mechanism of anesthesia and the precise way in which alteration in the lipoid components of cells changes their

irritability. Verworn, in particular, insists that anesthetics act primarily on the oxidative mechanisms of cells. It is well known that lack of oxygen usually is attended with a decrease in irritability, so that results closely resembling, if not identical with, anesthesia may be produced thereby. It is true that the rate of oxidation in active tissues may be lowered during anesthesia; but as Lillie, among others, has emphasized, this effect is rather a consequence than a cause of the lessened activity.[1] He adds that obviously whenever free oxygen is necessary to the normal activities of a tissue its withdrawal will arrest those activities; but the effects produced by lack of oxygen are not to be identified with anesthesia because of such incidental resemblances or parallelisms.

Even for the practical aspects of anesthesia it is of no little moment to establish the fact that tissue asphyxiation or the suppression or prevention of oxidation processes is not the essential basis of anesthesia. How then are we to regard the antistimulating action of anesthetics? How is irritability suppressed by them? A partial explanation of this is the fact, which Dr. Lillie[1] of the University of Pennsylvania has recently emphasized anew, that the primary process in stimulation is a membrane process. The permeability of cells is modified or determined by membranes. According to Lillie, anesthetics produce their essential effects by modifying the properties of the semipermeable plasma-membranes of the irritable tissues, making these structures more resistant to changes of permeability than normally. Since variations of permeability are essential to stimulation, the irritable tissue is thus rendered temporarily insensitive or irresponsive.

In recording these statements we are not giving any final solution to the varied problems of anesthesia; but the seat of action of anesthetic compounds has been more definitely located. On the view championed by Lillie the membrane is a main controlling factor in cell processes; and by changing its state, whether by lipoid-dissolving anesthetics or otherwise, we may alter the entire physiologic activity of the cell.

1. Lillie, R. S.: The Physicochemical Conditions of Anesthetic Action, Science, June 27, 1913, p. 859.

THE GOVERNMENT AND RADIUM

The supineness of the United States government as compared with the attitude of some foreign governments in matters relating to the health and welfare of its citizens is perhaps nowhere better illustrated than in its relation to radium. Some time ago[2] we called attention to the fact that radium deposits of unusual value had been found in Colorado, but that they had already passed to a large extent into the hands of private owners who were exporting the most valuable ore to Europe. So far the United States government has taken no steps to secure to its citizens the use of this element which, notwithstanding the exaggerated and unwarranted claims made for it by certain commercial interests, promises to have a unique field of usefulness in therapeutics. The difference in the attitude of European governments on the subject is shown by the fact stated in the editorial referred to above, that the Austrian government immediately on the discovery of radium in St. Joachimsthal secured control of the mines producing radium and arranged for its scientific and medicinal utilization.

Although possessing no radium-producing mines, Germany recently has purchased a supply of radium and placed it at the disposal of some of its university hospitals. The popularity of this action has been shown by the comments of the German press; in fact, a portion of the latter is advocating that the German government take over the entire control of the radium used for medicinal purposes in Germany. Thus the *Kölnische Volkszeitung* states that "to allow the traffic in this unique medicinal agent to be controlled by private firms is to upset all ideas of culture and humanity; a condition of affairs in which private gain and speculative interests are allowed to come into conflict with the health of the people is not to be tolerated." Yet the United States is allowing the radium found on its public domains to be monopolized by private persons without so far having made any provisions for securing to its citizens any benefit from it.

Aside from the foregoing considerations, however, a special responsibility rests on the United States to investigate not only the occurrence but also the usefulness of radium and radio-active waters, for the government itself has taken the lead in exploiting, in an entirely unjustified manner, the radio-activity of the waters of Hot Springs, Arkansas. These springs are the property of the federal government, and the latter for some time has been advertising that the waters owe their value to their radio-activity—a claim that has never been verified; in fact, the degree of the radio-activity of these waters has never, to our knowledge, been made public, although it seems that the Interior Department, which has jurisdiction over the springs, is in possession of information on this subject. The late Major Hallock, medical director of the springs, in a paper presented at the Minneapolis meeting,[3] called attention to the efforts which had been made to secure an investigation of the therapeutic value of the waters; the bill before Congress providing for such an investigation was never reported from the committee, and it is said that the failure of the committee to act on it was due to the opposition of the representatives in Congress of certain purely local interests at Hot Springs.

Thus our national government is not only allowing the deposits of what is already known to be a therapeutic agent of value to fall into the hands of private commercial interests, but also is actually a party to the exploitation of "radio-active" waters in a manner for which there is at present no justification.

2. Radium in the United States, editorial, THE JOURNAL A. M. A., June 14, 1913, p. 1882.

3. Hallock, Harry M.: Some Aspects of Hydrotherapy in the United States, THE JOURNAL A. M. A., July 26, 1913, p. 260.

THE GOUT SITUATION

It is at times decidedly discouraging to be confronted with the practical problems of the management of a long-known and widely distributed condition like gout, and to feel how inadequate our actual knowledge of it still remains. Only when we put aside all inherited beliefs and acquired prejudices and take a purely objective survey of the established facts does a wholesome realization come of the substantial progress made where chaos has seemed to reign. For the sake of this satisfaction, if nothing more, it is well to take account from time to time of the status of our established information and to gain the impetus for better results which comes from well-digested knowledge.

What are some of the accepted facts, in distinction from transitory theories, concerning gout? The fundamental one is that the gouty deposits are actually composed of salts of uric acid and that as a rule the blood of gouty subjects discloses a larger content of uric acid than does the circulating fluid of normal individuals under the same dietary regimen. It may be assumed, furthermore, that the increase in the proportion of uric acid in the blood has some bearing on the deposition of the urates. In gout there are unquestionably also certain localized tissue changes which play a decisive rôle in the precipitation phenomena at the very seat of their exhibition.

We are thus brought to the question of the possible relation of the accumulation of urates to the manifold symptoms of gout, the severe crises and characteristic "attacks." Is it true that uric acid is *per se* the instigator of these diverse manifestations? Let us frankly admit that despite the popular notions on the subject, the exaggerated pronouncements of writers like Haig, and the vague convictions of most physicians, there is no conclusive proof available to substantiate a direct pathogenic relation between uric acid and gout. It is not inconceivable that in this condition, the organism is under the influence of peculiar functional disturbances which have their outward expression in the behavior of the uric acid. Thus instead of the latter substance it might be these fundamental altered processes, themselves the occasion for the abnormal uric acid manifestations, which are the real causes of the disease disturbances set up in gout.

On the other hand, various circumstances, if nothing more, suggest a more direct relation between uric acid and the acute attacks of gout. These crises have been observed to ensue after the liberal feeding of uric acid precursors (as in sweetbreads), and after their sudden liberation in the cellular disintegrations attending the crises of pneumonia or following intensive Roentgen-ray treatment. Again, it is known that the incidence of the gouty attacks follows that of marked changes in the output of urates in the urine. The excretion is diminished before and heightened after the attack. Finally, therapeutic relief is actually obtained by the use of drugs which as a matter of fact do facilitate the excretion of urates. We can scarcely believe that all of these circumstances are to be interpreted as mere coincidences rather than as pointing to at least some causal property on the part of uric acid in the genesis of gouty conditions.

Whatever the ultimate outcome of these attempts to establish the true relation of uric acid to gout, the differences in the behavior of uric acid in the normal and the gouty organism still call for interpretation. Here, too, there is room for divergent hypothesis. It may be that the solubility of uric acid in the organism has become modified by impending conditions; or the metabolism which leads to the formation of uric acid may experience a decided upset; or the eliminating functions may be depressed by factors involving the organs of excretion, the kidneys. Each of these possibilities has been subjected to careful scrutiny and extensive investigation in the past few years. New ideas about the conditions governing solubility in solutions like the blood and tissue fluids rich in colloids have been introduced. The part played by the alkalies has been variously interpreted; but amid all the vicissitudes of theory the practical efficiency of their use has not been overthrown. As for the metabolic explanations of gout, we believe that the consensus of present opinion will point to uric acid as an end-product rather than a mere stage in purin metabolism in man.[1] Recent investigation, particularly in American laboratories, has served to emphasize new and unsuspected steps and stages in the conversion of nucleic acid compounds into the final uric acid, and to divorce purin metabolism completely from that of other nitrogenous compounds. Perhaps the kidneys themselves must assume some of the burden of responsibility for the occasional accumulation of uric acid in the blood in disease. If so, they would seem to show extreme selective action in respect to their pathologic functions.

So long as the precise nature of the metabolic upset in gout is not definitely made out, all therapeutic measures must be based in large degree on the teaching of experience. Both this and purely theoretical considerations have justified the withdrawal of uric acid precursors from the diet and the introduction of the so-called purin-free dietaries in gout. In the attempt to accomplish such changes in regimen, an exaggerated importance has now and then been given to minor details. The extreme enforcement of exclusive diets has little therapeutic justification, particularly when it offends the tastes of a sensitive patient. The ever-present debates about the relative values of white and dark meats involve at best insignificant milligrams of inconsequential distinction. Common sense is as valuable in dietetics as elsewhere. But it is as incumbent on an up-to-date physician to know what foods contain the purin precursors of uric acid and what do not, as it is to know the latest drug advertised to dispel this objectionable excretory product. So long as a further basis for therapeutic inno-

1. Uric Acid, editorial, THE JOURNAL A. M. A., Aug. 17, 1912 p. 545.

vations is not forthcoming it is well to bear in mind not only the desirability of diminishing the production of the reputed *materia peccans*, but also of sparing the entire organism, which may be the seat of overwork from perverted processes, from undue metabolic work. This may be accomplished by reasonable moderation in the diet as a whole, by conservative physical therapy, and by a careful mode of life. As Minkowski remarked at the recent International Congress for Physiotherapy, we need not underestimate the value of purely empiric rules in the treatment of gout. But if it is admitted that there are many traditional truths in this field, we may hasten to add that there are likewise many errors sanctioned by tradition—errors which have maintained their prestige solely because they are not easily disproved.

Current Comment

THE SIGNIFICANCE OF FORMIC ACID EXCRETION

Recently we called attention to the interest which has of late been aroused in scientific laboratories in the occurrence of formic acid as a constituent of the urine.[1] Inasmuch as this substance, H.COOH, is an extreme product of oxidation carried almost to the final stage of carbon dioxid formation and can be obtained outside of the body by the oxidation of diverse materials, it requires no unreasonable assumption to postulate that it may also arise in the organism in the course of the oxidation of fats, carbohydrates or proteins. First of all, however, it is necessary to divorce facts from fancies. The prominent fact which all the more recent investigators have confirmed is the occurrence of formic acid as a usual, rather than merely a casual, component of the urine. It is found in health and diseased conditions alike; and the variations in its output have of late been studied assiduously in the hope both of correlating them with determinable pathologic processes and of learning what is the antecedent of formic acid in metabolism. In this country Dakin in particular has discussed the rôle of the compound as an intermediary stage in the catabolism of food substances and their derivatives.[2] In the earlier stages of the development of any theory the statistics of the subject are of fundamental importance. Hence it seems worth while to report the newest contributions in reference to the urinary excretion of formic acid. Dr. Strisower[3] of the First Medical Clinic in Vienna—one of the latest to undertake the study of the subject—agrees with those who believe that formic acid is a normal intermediary product of metabolism. According to him the average daily output in the urine is about 13 mg. In contrast with some of the earlier observers, Strisower has not noted any striking variations that can be attributed to specific dietary components. There are numerous diseases of the most diverse types in which the quantitive features of formic acid excretion appear to be not unlike those of normal man. In conditions attended with asphyxial symptoms, however, the output under this diminished oxidative capacity is reported to be larger than usual. The Vienna investigator agrees with several of his predecessors in noting an increased excretion in diabetes which he interprets as a sign of a disturbed metabolism of fats in this disease. Without entering into the intricate details of chemical argument we may now summarize the current opinions by the statement that formic acid may probably be an oxidative derivative of all the foodstuffs in common. Like the acetone compounds and lactic acid, for example, it is one of the simpler derivatives which "crop out" in the course of the disintegration of the larger molecules that furnish energy to our cells.

1. The Significance of Formic Acid in the Urine, editorial, THE JOURNAL A. M. A., Sept. 6, 1913, p. 774.
2. Dakin, H. D., and Wakeman, A. J.: Formic Acid as an Intermediary Substance in the Catabolism of Fatty Acids and Other Substances, Jour. Biol. Chem., 1911, p. 327. Dakin, H. D., Janney, N. W., and Wakeman, A. J.: Studies on the Conditions Affecting the Formation and Excretion of Formic Acid, *ibid.*, xiv, 341.
3. Strisower, R.: Ueber die Ausscheidung der Ameisensäure im menschlichen Urin in physiologischen und pathologischen Zuständen, Biochem. Ztschr., 1913, liv, 189.

ANAPHYLAXIS AND PROTEIN DERIVATIVES

According to the most popular current theory of the genesis of the phenomena which characterize anaphylaxis, the reinjected protein or the tissue protein, as the case may be, undergoes a sort of digestive cleavage whereby toxic fragments are liberated within the organism. Vaughan and his collaborators in particular have championed the general view according to which such toxic degradation products derived from proteins initiate the symptoms of anaphylaxis. Drs. Auer and Van Slyke of the Rockefeller Institute for Medical Research have reasoned that if this explanation is tenable it ought to be possible to detect protein derivatives in those organs in which the failure to function leads to death in anaphylaxis. Accordingly, they have made chemical examinations of the lungs of guinea-pigs which exhibit a very typical permanent distention when death has occurred by anaphylactic shock. Their investigation[1] of this organ in which, according to the theory as outlined, the occurrence of protein cleavage products might be postulated, was negative in its outcome. Auer and Van Slyke point out in consequence that their experiments offer no support to the assumption that proteolytic cleavage products play an important rôle in the actual fatal serum anaphylaxis of the guinea-pig. We believe that a working hypothesis should be abandoned when facts are disclosed which are in obvious opposition to it. It would surely be unwarranted, however, to give up the very fruitful theory of Vaughan on the basis of limited negative evidence such as has just been recited.

TYPHOID FROM WATERCRESS

It is apparent that an attempt to trace typhoid infection to the use of uncooked vegetables such as lettuce, watercress and celery is likely to succeed only under rather peculiar conditions. Ordinarily the distribution of such articles of food to a large circle of consumers, and the difficulty of discovering, several weeks afterward, that such things were eaten, and by whom, are facts that conspire to render us ignorant of the real

1. Auer, J. and Van Slyke, D. D.: Eiweissspaltprodukte und Anaphylaxie, Zentralbl. f. Physiol., 1913, xxvii, 435.

frequency of such sources of infection. A remarkable typhoid outbreak apparently due to polluted watercress has recently been reported from Philadelphia.[1] At a wedding breakfast, June 24, with forty-three guests in attendance, nineteen persons ate watercress sandwiches. Eighteen of these were ill, July 22, with typhoid fever, only two of them being in Philadelphia at the time, while the other sixteen were scattered in suburban territory and in summer resorts along the Atlantic coast as far away as Maine. Investigation by the Philadelphia Bureau of Health showed that the watercress had been secured from a farm on which the sanitary conditions were quite unsatisfactory. While the typhoid bacillus was not isolated from the cress-bed, all the other circumstances of the outbreak afford strong reason for suspecting watercress to be the vehicle of infection. It may be recalled that an outbreak of typhoid in Hackney, London, in 1903, was likewise attributed to watercress infection, although the evidence in that outbreak was not so convincing as that in the one just cited. Infection by celery has also been reported.[2] Students of epidemics will have their attention still more strongly drawn by the Philadelphia case to the possibility of infection from such sources.

THE EXCRETION OF MORPHIN

It scarcely need be emphasized that the physiologic fate of drugs employed freely in medicine deserves a most thorough investigation. To use therapeutic agents intelligently presupposes some precise knowledge of their function; and it ought also to include an understanding of what happens to them as well as to the body on which they exert their specific activities. Are they modified or destroyed in the organism? How do they or their derivatives leave it, or are they, perchance, stored up or deposited somewhere in the different tissues and organs? In the case of certain chemical substances, particularly those of inorganic matter, a partial or complete answer can already be given to such questions. In the pursuit of this information many facts of new interest have been discovered, as for example the importance of the intestine as a place for the elimination of certain elements like iron, calcium, etc. Regarding the transformation of the alkaloids in the organism, only the beginnings of an exact systematic understanding have been developed. Yet it is precisely in this group that much helpful information is to be expected. The interpretation of the peculiar phenomena of habit and tolerance in the use of some of the alkaloidal drugs presupposes exact knowledge of their fate; the problems of repeated doses involve an appreciation of possible retarded excretion and consequent cumulative action. In the case of morphin, one of the most widely used alkaloids and likewise one of the most abused, the supposition has long prevailed that it is not excreted by the kidneys to any noteworthy extent, but that in so far as it leaves the body unchanged this alkaloid is eliminated through the intestinal tract. For this reason little attention has of late been paid to the urine whenever it has, for any reason, seemed desirable to search for morphin in the organism. A careful reinvestigation of the excretion of morphin conducted at the pharmacologic institute of Heffter in Berlin[1] with more approved methods of quantitative analysis indicates that it will be necessary to revise our beliefs in this matter. As much as 39 per cent. of the morphin introduced into the body may reappear in the urine, so that evidently the participation of the kidneys in the excretion of this alkaloid is by no means negligible.

1. Engineering News, Aug. 14, 1913.
2. Morse: Report State Board of Health of Massachusetts, 1899, p. 751.

1. Kaufmann, Asser W. Ritter von: Ueber die Ausscheidung des Morphins im Harn, Biochem. Ztschr., 1913, liv, 161.

A SPECIFIC FOR CONTAGIOUS ABORTION IN CATTLE

The contagious abortion in cattle has proved to be one of the most costly diseases to which agriculture has been subjected. Methods of prevention have been under investigation for some time without great promise of eradicating the infection. What appears like a specific against the disease has been found by Dr. Taylor of the Montana Agricultural Experiment Station[2] in phenol (carbolic acid), either fed in solution or injected hypodermically. He observed that cows as a rule will eat with relish as much as 750 c.c. of a 4 per cent. solution of phenol in feed daily; but hypodermic injection as a treatment in an infected herd involves less labor than feeding. The method used with range cattle was to run them into a chute and inject 10 c.c. of 4 per cent. phenol under the skin just behind the shoulder-blade every two weeks. In cases of impending abortion, phenol can be injected in sufficient quantities to cause staggering gait and dilatation of the pupil of the eye with no apparent unsatisfactory after-effects. All males used for breeding purposes should also be treated, because the disease may be transmitted through the medium of the male unless proper precautions are observed. In human therapy we have come to adopt an attitude of extreme caution toward "specifics" for infections. What is reported in a government publication, however, as a successful procedure is entitled to receive publicity.

2. Taylor: Bull. 90, Montana Agric. Exper. Sta.

Medical News

COLORADO

Personal.—Dr. Leonard W. Ely, Denver, has been appointed associate professor of orthopedic surgery and Dr. Ralph W. Majors, instructor in pathology by the board of trustees in the Leland Stanford Jr. University, San Francisco.

Organization of Medical School.—At a meeting of the faculty of the University of Colorado, School of Medicine, September 1, under the new plan of organization adopted by the board of regents, the following groups were elected for the coming year: Surgery, Dr. Charles B. Lyman, chairman, and Profs. J. R. Arneill, S. G. Bonney, Cattermole, Gilbert, J. N. Hall, Moses Kleiner, Edwin J. Rothwell, Wm. H. Sharpley, Charles F. Shollenberger, Charles B. Van Zant and Herbert B. Whitney; eye, ear, nose and throat, Dr. William C. Bane, chairman, and Profs. Melville Black, John Chase, David H. Coover, Edward Jackson, John M. Foster and Robert Levy; obstetrics and gynecology, Dr. Charles S. Elder, chairman, and Profs. Thomas M. Burns, Walter A. Jayne, Francis H. McNaught and Thomas E. Taylor; specialties, Dr. George H. Stover, chairman, and Profs. Samuel B. Childs, William H. Davis, Arthur J. Markley, Newton Wiest, George E. Neuhaus.

H. T. Pershing and C. L. Pershing. The fundamentals group will be divided into two sections under Drs. Carbon Gillaspie and Washburn of Boulder, chairmen; and Profs. Burnett, Clough T. Boulder, F. Gillett, Denver; Byles, Ekeley, Mitchell, Peebles, William C. Hensen, A. R. Boulder, Emley B. Boulder, James C. Boulder, Queal, Todd and Ross C. Whitman, Denver.

ILLINOIS

Addition to Beverly Farm.—A twenty-room addition to the buildings of Beverly Farm, Godfrey, has been completed. This gives the farm a capacity for sixty-five patients.

Personal.—Dr. S. M. Wylie, Paxton, was the guest of honor at a banquet given by the members of the Bi-County (Ford-Iroquois) Medical Society at Gilman, September 4.——Dr. C. O. Molz, Murphysboro, sustained a fracture of the left shoulder and injuries of the hip by the overturning of his automobile, August 31.——Dr. E. H. Butterfield, Ottawa, for sixteen years county physician, announces his retirement from the practice of medicine.——Dr. A. S. Wall, Champaign, is reported to be ill in the Julia F. Burnham Hospital.——Dr. J. M. Evey, who has been ill in the Monmouth Hospital, is reported to be improving slowly.——Dr. W. A. Dew, Belleville, is ill with an infected wound of the hand.——Dr. S. V. Balderston, health commissioner of Evanston, has resigned.——Dr. and Mrs. Walter Hoffman, Mount Morris, have returned from Europe.——Dr. J. F. Percy, Galesburg, has returned from abroad.——Dr. and Mrs. Otis Trotter and daughter, Quincy, have returned from Europe.——Dr. and Mrs. John A. Koch, Quincy, sailed from Europe, September 20.——Dr. John E. Allaben, Rockford, has returned from abroad.

Chicago

New Officers.—Chicago Medical Women's Club, September 10: president, Dr. Effie L. Lobdell; secretary, Sadie Bay Adair.

Personal.—Dr. G. W. Torrey was exonerated by a coroner's jury September 9 after inquiries into the death of Mrs. Elizabeth Bird, who was struck by Dr. Torrey's automobile, September 3.——Dr. and Mrs. Cassius C. Rogers have returned from Europe.——Dr. Truman W. Brophy has been decorated by the French Minister of Public Instruction on account of his work on oral surgery.

KENTUCKY

Personal.—Dr. James M. Ray, Louisville, has returned from abroad.——Dr. J. D. McConnell, Shady Grove, is under treatment in a hospital in Evansville, Ind.

Extend War Against Tuberculosis.—The executive committee of the State Tuberculosis Commission met in Frankfort, September 2, and took steps toward active county campaigns to raise interest in the establishment of sanatoria for tuberculosis. It was decided to employ two men this fall, one to conduct a campaign in Henderson County and the other in Fayette County.

NEBRASKA

Personal.—Dr. Robert Percy Jensen, South Omaha, was operated on at the Omaha General Hospital, August 30, for appendicitis, and is reported to be improving.——The office of Dr. Joseph N. Campbell, Stamford, was destroyed by fire, August 27.——The residence and office of Dr. James C. Anderson, Hayes Center, was burned September 3.——Dr. Nellie Deffenbaugh, Grand Island, on September 5, assumed the superintendency of the State Tuberculosis Hospital.

Hospital Staff Selected.—Dr. John E. Summers, Omaha, chief of the staff of the Douglas County Hospital, has selected the following staff: Drs. Charles McMartin, Alfred Schalek, John W. Hellwig, Herbert C. Sumney, Arthur C. Stokes, O. T. Schultz, Alfred F. Tyler, John B. Potts, Harry L. Arnold, Alexander G. Young, Joseph M. Aiken, William H. Mick, Andrew B. Somers, Frederick J. Wearne, Rudolph Rix, Palmer Findley, Robert R. Hollister, Hugh W. Weightman, Rodney W. Bliss, William F. Milroy, Adolph Sachs, Arthur D. Dunn.

Medical School in New Home.—On November 9, the University of Nebraska School of Medicine will move from Lincoln into a new building at 42 Second Street and Dewey Avenue, Omaha. The building has been erected at a cost of $115,000 and is almost completed. The new members of the faculty coming to Omaha are: Profs. A. A. Johnson and Oscar T. Schultz from Western Reserve University, Cleveland; Prof. Claude R. Michell, physiology; Prof. C. W. M. Poynter, Lincoln, anatomy; Prof. A. E. Gunther, physiology and pharmacology; Prof. Irving S. Cutter, Lincoln, biologic chemistry and director of laboratory work, and Prof. W. A. Willard, the microscope. The following additions have been made to the clinical staff: Dr. John E. Summers, surgery; Drs. Ray Crummer, Omaha, and E. L. Bridges, Omaha, medicine, and Dr. J. P. Lord, Omaha, orthopedic surgery.

NEW YORK

New York City

Railroad Accidents Increase.—The report of the Public Service Commission shows that for the month of July there were 29 deaths from railroad and street railways in New York City, exactly the same number as for the corresponding time of last year. There were 197 persons seriously injured. Altogether there occurred during the month of July 7,884 accidents of various kinds, including 310 persons struck by cars, 1,152 vehicles struck by cars and 320 derailments.

Death-Rate in Hospitals Increases.—The report of the Health Department for the week ending September 13 shows a marked increase in the number of deaths in the hospitals of the city compared with a similar period of last year, but a corresponding decrease in the number of deaths in the tenements. This is interpreted as indicating that the people are coming to appreciate the benefits of hospital care. The total death-rate of the city for the week under consideration was 12.17, as compared with 12.39 for the corresponding week of 1912. There was an increase in the number of deaths from Bright's disease and heart diseases, while there was a marked decrease in the number of deaths from pulmonary tuberculosis.

PENNSYLVANIA

Scarlet Fever Closes Schools.—Owing to thirty cases of scarlet fever in the Sugar Notch Borough, the schools have been closed and the town practically quarantined.

Reading Fight Tuberculosis.—Through the efforts of Miss Mary Parvin, the school lecturer of the Reading Tuberculosis Society, a message on school and home hygiene has been delivered to thousands of children and transmitted by them to their parents. Talks are given to children in the sixth, seventh and eighth grades and the question method is used.

Philadelphia

Grand Jury to Investigate Dumping of Garbage.—The Federal Grand Jury convened on September 15, to probe the dumping of garbage in the Schuylkill River. Jacob L. Havener, Jr., superintendent of the American Product Company, has been held under $800 bail for court by Commissioner Edmunds, in the federal building, on a charge of having dumped refuse into a navigable stream. The minimum penalty for the offense charged is a fine of $500 or thirty days imprisonment, or a maximum penalty is $2,500 fine and one year imprisonment.

School for Cripples Opens.—The special school for cripples in the Horace Binney annex of the McCall School at Sixth and Spruce Streets opened September 11, and a bus made the rounds of the section of the city between Christian and Lehigh Avenue and Broad Street and the Delaware. Everything that will contribute to the comfort and safety of the children has been arranged. The classroom is directly at the entrance of the building, their classes will be dismissed fifteen minutes early and at noon they will be served with penny lunches by the Starr Garden Association.

Dental Dispensaries Have Additional Surgeons.—Director Neff of the Department of Public Health and Charities, has appointed the following dental physicians to have charge of the two additional dental dispensaries that have been established for the benefit of public schoolchildren: Drs. Louise Schembs, Louis Jacobs, Armin T. Fellows and Edward K. McPherson. The successful candidates were the first four on the civil service eligible list for such positions, which pay $700 each. The new dispensaries will be established at the Thomas May Pierce School at Twenty-Third and Cambria Streets, and at the William B. Hanna School at Fifty-Eighth and Media Avenue.

To Sterilize All Water for Public Schools.—Sterilization of drinking water in the public schools, especially in the district east of Broad Street and south of Allegheny Avenue, is planned by Dr. Walter Cornell, chief medical inspector of the public schools, to guard against further spread of typhoid fever among schoolchildren. By an investigation and survey made last June by Dr. Samuel G. Dixon, State Health Commissioner, it was learned that the majority of victims of typhoid fever were among the schoolchildren. The number of new cases of typhoid reported to the Bureau of Health during

the week ending September 13, was 71 as compared with 47 for the week previous.

New Institutions Authorized.—The wise initiative of the medical profession of Philadelphia and Pennsylvania has finally brought into legal existence large new institutions that will bring the city and state well into the advance along social lines: Mentally defective women of childbearing age, of whom at least 15,000 are known to be within the state, will now be permanently segregated in a great farm colony in a remote mountain forest reserve, thus preventing further multiplication. A home for alcohol and drug habitués, long agitated, is provided for in another forest reserve as, elsewhere, is an industrial home for women. Not "paths" of any kind or Christian Scientists or other self-seekers but everyday doctors are the plodders who thus work for and aid the public, just as in all other great social movements.

TEXAS

New Building for Sanitarium.—The Texas Baptist Memorial Sanitarium, Dallas, has called for bids for the erection of an additional building, 40 by 90 feet, two stories in height, of fireproof construction, to cost about $15,000.

Inspection at Mexican Ports.—As the result of a conference with Dr. Ralph Steiner, Austin, state health officer, acting state quarantine officer Dr. E. S. McCain, Galveston, has proceeded to Tampeco, Mex., to take charge of the inspection of Americans desiring to leave that country.

New Hospital Building.—The State Medical College, Galveston, is to erect a nurses' home for which $65,000 was appropriated by the last legislature. As the result of this, the fund of Mrs. R. Waverly Smith and John Sealy, Galveston, of $80,000 for a new building for the John Sealy Hospital for white women patients, becomes available.

Free Clinic Opened.—The Physicians' Free Clinic Association opened a clinic at 211 Commerce Street, Fort Worth, September 1. The following physicians are members of the staff: Drs. W. M. Trimble, Eugene Hall, O. L. Jones, Webb Walker, E. C. Axtell, P. L. Hooper, D. C. Rumph, T. G. Rumph, Ross Trigg, F. G. Sheddan, H. O. Brannan, J. T. Montgomery, J. L. Cooper, Wallace B. Smith, C. F. Hayes, J. W. Kuykendall, J. D. Mitchell, R. O. Braswell, Alden Coffey, J. H. McLean, E. L. Myrick, R. H. Gough, C. H. Pember, Crittenden Joyes, S. J. Brownson, G. E. La Beaume, W. D. Littler, John Potts, F. E. Rushing, M. E. Tadlock, W. C. Rountree, G. T. Allison, A. R. Hays, Field Farrar, C. E. Waller, J. T. Edwards, C. A. Ward and Nugent brothers. Dr. R. H. Goff has been elected president of the clinic; Drs. Field Farrar and D. C. Rumph, vice-presidents, and Dr. J. L. Cooper, secretary-treasurer.

Personal.—Dr. Henry Hartman, assistant health officer and bacteriologist, Austin, has resigned to accept a position as head of the pathologic department of the University of Texas, Galveston.——Dr. Z. F. Lillard, has been elected a member of the Board of Health of Houston, vice Dr. John T. Moore, resigned. ——Dr. William M. Moore, Paris, was operated on at the Aiken Hospital, September 3.——Dr. I. L. McGlasson, state quarantine officer, Galveston, has returned from abroad.——Dr. Joe Shelton, Waco, has been appointed chief surgeon of the St. Louis, Brownsville and Mexico Railway Company with headquarters at Corpus Christi.——Dr. C. H. McCollum, Hico, has gone abroad.——Dr. T. T. Jackson, San Antonio, has been appointed a member of the State Board of Health, vice Dr. A. A. Ely, Galveston, recently appointed a member of the board of regents of the University of Texas.——Dr. R. W. Noble, Temple, fractured his left arm while cranking his automobile, recently.——Dr. W. H. Betts, Fort Worth, was attacked by a patient and seriously injured, recently.

CANADA

Provincial Reciprocity with Great Britain.—Reciprocity in medical licenses has now been in force for some time between Great Britain and the following three Canadian provinces, Nova Scotia, Quebec and Prince Edward Island. New Brunswick is the latest province to join in this arrangement and it will very shortly be put into force.

Provincial Medical Board of Nova Scotia.—At the recent annual meeting of the Provincial Medical Board of Nova Scotia, a resolution was passed agreeing to accept the registration certificate of the registrar of the Medical Council of Canada, and without further examination, will register the holder thereof, on furnishing proof of identity and paying the necessary provincial registration fee. At the same time the board passed a resolution deprecating the fact that one province, British Columbia, on account of existing local legislation is unable to accord the same general recognition to all holders of the Dominion Medical Council's certificate. During the past year there were ten additions to the register of Nova Scotia and ten erasures on account of death, leaving the numerical strength of the register of that province as it was at 671. Of this number only about 440 are residents in Nova Scotia, the remaining number being chiefly in the United States. Dr. John Stewart, Halifax, was reelected president, and Dr. A. W. H. Lindsay, Halifax, registrar.

Hospital News.—From the leper hospital at Tracadie, N. B., two patients have recently been discharged. One man aged 39 left a year ago after having received twenty injections of nastin. Two subsequent examinations show him remaining well. The other was a man of 67 years, discharged in November last. He had received sixty injections in all and remains in good health. The physician now in charge of this government institution is Dr. Langis.——Prince Edward Island is to have a tuberculosis sanatorium through the generosity of the Hon. Charles Dalton. Dr. A. F. Miller, superintendent of the Kentville, N. S. sanatorium, will assist in selecting site and erection of building.——Three new wings are being added to the Children's Memorial Hospital, Montreal.——The provincial hospital for the insane at Battleford, Saskatchewan, is nearly completed. Dr. J. W. McNeil, Hanley, Sask., is to be the superintendent ——The Dominion Government is building a hospital and school for Indians at The Pas, at a cost of $76,000.——A hospital is to be built at Comox, B. C., by the Sisters of St. Joseph.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, Sept. 6, 1913.

The Investigation of Pellagra

Dr. Louis Sambon, who was twice sent to Italy by the pellagra investigation committee, has now gone on a third expedition to study the disease in America and the West Indies. In the United States he will meet Dr. Stiles and others who have devoted themselves to the study in that country. The cause of pellagra was long held to be due to the consumption of damaged maize, since it is in maize-eating countries that it prevails; but Dr. Sambon's theory, which is based on carefully thought-out epidemiologic grounds, is that pellagra, like malaria, yellow fever, filariasis, etc., is conveyed by an insect—a simulium, or sand-fly. It is owing to Dr. Sambon's untiring advocacy of this view and his examination of cases that the disease has now been recognized in England. The first case dates back only to October, 1912, but already other cases are being recorded in the medical journals, sometimes two or three in one number.

Unhealthy Offices for Clerks: Proposals for Betterment

The health officer for the City of London, Dr. Collingridge, states in his recent annual report that many clerks have to work in unhealthy surroundings, and that legislation is necessary for the improvement of the conditions of their employment. He refers to the Railway Offices Bill as a step in the right direction, but says that it is difficult to understand why provisions for efficient ventilation and adequate lighting should be restricted to railway offices. Two other bills dealing with the conditions of employment of all clerks have, however, been before Parliament for the last two sessions. One of them, the Factory and Workshops Bill, which was first introduced in the House of Lords by Lord Salisbury in 1912, proposes to bring underground workshops and offices under the jurisdiction of the Factories Acts, so that they may be inspected under the same terms and subject to the same penalties as large factories and workshops. This bill is supported by the National Federation of Shop-Workers and Clerks, which has a membership of 140,000. Last session it passed through all the stages in the House of Lords, but no progress could be made with it in the House of Commons owing to pressure of government business. The National Union of Clerks, while supporting Lord Salisbury's bill, has also had before Parliament for three years a measure of its own, the Offices Regulation Bill, which seeks to bring all persons employed as clerks in offices under the protection of the Factories Acts. It is stated that thousands of clerks are compelled to work not only in unhealthy underground offices but in offices just as insanitary which look out on courtyards. It is also

stated that a factory inspector has frequently to pass through inadequately ventilated and lighted rooms, where clerks are employed, on his way to the workshop which he is to inspect, and yet he is powerless to call attention to the unhealthy condition of these premises. The mortality of clerks from diseases of the chest is twice as high as among the general population. Twenty-five per cent. of the deaths are due to consumption, and 33 per cent. to some form of lung disease. This excessive death-rate is ascribed partly to the sedentary nature of clerical employment, and partly to the dirt and dust, the cold in winter and the heat in summer, of the offices in which many of these clerks have to work.

New Buildings of the London School of Tropical Medicine

As the result of the appeal of Mr. Austin Chamberlain, formerly Secretary for the Colonies, considerable additions have been made to the London School of Tropical Medicine. The funds have been partly subscribed by the public and partly granted by the government. Additional buildings have been erected, consisting of a laboratory providing accommodation for sixty students, and of a hostel with provision for twenty-five residents. The new laboratory has been built so as to be continuous with the old laboratory of the school. It is a square single-story building, lighted by a weaver roof. The accommodation set free by it has rendered possible the formation of several special laboratories, of preparation rooms, of the director's room and of incubation rooms. The resident accommodation is intended for the use of students qualifying for appointments in connection with the Colonial Office, but it is expected to be sufficient to enable any of those attending the school, who desire, to reside on the spot. Each of the rooms is furnished as a bed-sitting room, and as a result of the extensions there is now considerably more space available for the common rooms connected with the school. In connection with the work of the school an important new departure has been made by the inauguration of a course in Tropical Sanitation and Hygiene, this step having been taken in consequence of a demand expressed from India and from most of the dominions. It is to consist of an eight weeks' course of laboratory studies and part health work, special attention being given to bacteriology and hygiene.

Impure Milk

The report just issued by Dr. Collingridge, health officer of the City of London, is not reassuring as to the quality of our milk-supply. From 1902 onward samples of the milk arriving at the railway termini have been systematically taken and submitted to bacteriologic examination by Dr. F. W. Andrews. He found that of these samples 20 per cent. were dirty, 46.6 per cent. were "fairly clean," and only 33.3 per cent. were describable as "clean." The tubercle bacillus was present in 6.6 per cent. of the cases. A study of the returns from 1904 to 1912 shows that the proportions between "fairly clean" and "unclean" have fluctuated very widely—in one year being as 80 to 12, and in a later year 28 to 71. In only one year were all samples examined found free from tubercle bacilli. These results indicate the prevalence of highly unsatisfactory conditions in the milk trade. Dr. Andrews says that until the hands of farmers, dairymen and others engaged in the distribution of this indispensable commodity are forced by statute no real or lasting improvement can be looked for. Indeed, it is evident that the inspection of dairies and cowsheds is not of itself enough, though even there much is to be done. The old pattern of churn in which the milk was sent by rail has been improved. The perforations that were provided in intention for ventilation, but in effect for the admission of dirt, have been done away with, and replaced by dust-proof cans; but that improvement must be neutralized as long as there is no guarantee that the touch of those engaged in the processes of dairying is free from contamination.

PARIS LETTER

(From Our Regular Correspondent)

PARIS, Sept. 1, 1913.

Annual Meeting of French-Speaking Alienists and Neurologists

This congress was held at Le Puy, August 1 to 7, under the presidency of Dr. Arnaud of Vanves and the vice-presidency of *agrégé* Professor Dupré of Paris. Three questions were discussed: first, the disturbances of motion in dementia praecox; second, anesthesias in cerebral hemiplegia; third, the therapeutic and medicolegal indications for operation on the insane. Dr. Lucien Picqué, surgeon of the hospitals of Paris, read a paper on this subject, an interesting discussion following.

OPERATIVE INDICATIONS IN THE INSANE

Dr. Picqué remarked that half a century ago the action of surgery on mental disturbances was regarded from widely different points of view. Some operated directly on the brain or its envelopes, but their attempts are still too few and too uncertain to furnish the basis of a rational surgery. Other surgeons, and these are the more numerous, attempt to cure certain forms of insanity by the surgical treatment of pathologic foci situated outside of the brain. Numerous "cures" have been announced from such procedures. Picqué reports a total of 2,666 operations in his service at the Sainte-Anne asylum up to Jan. 1, 1913. This includes 314 organic psychoses and 383 congenital psychoses—altogether 697 patients—on whom he has performed operations of urgency. There remained 1,969 patients on whom surgery has given variable results. Picqué believes that at present it is necessary to beware of operative statistics based on doubtful facts, and in the first place to establish the rôle of extracerebral pathologic foci with respect to the origin of insanity; that is, to define the nature of the relations between an organic lesion and certain concomitant mental conditions. This problem is at the base of the question of operative indications in the insane. To-day the study of certain functions permits the definition of the rôle of organic lesions in the production of mental troubles, as in the case of the relation between the thyroid gland and certain forms of insanity. It has been known for a long time also that infections of the liver or the kidneys may give rise to mental troubles. The importance hitherto given to hereditary influences has waned without disappearing. A surgeon, on the one hand, should take heredity into consideration so that he may recognize patients whose mental condition constitutes a contra-indication to operation. On the other hand, the theory of the extracerebral origin of certain mental disturbances permits the surgeon to attack the latter in their peripheral foci. The coincidence of insanity and a peripheral lesion, however, does not imply a causal connection.

When the therapeutic indication has been established it is necessary to decide on the therapeutic method to be employed. Some cases of insanity may, after a perfectly justified operation, persist, become aggravated or be cured according to the method of treatment employed. The surgeon's method should be chosen with reference to the mental condition of the patient, and thus questions of surgical technic play an important rôle in psychiatry. Because of its difficulties surgery of the insane constitutes a special branch which Picqué calls "surgical psychotherapeutics." It calls for a long apprenticeship and, it is needless to say, for high moral qualities.

While the insane patient is considered to-day as a sick man who has the right to benefit by all the resources of medical and surgical therapeutics, the French law of 1838 contains nothing which authorizes the surgeon to give surgical relief to the insane as a matter of course. The request for authorization from the families of the insane gives rise to great abuse.

Dr. Lagriffe of Auxerre remarked that the surgery of the insane was beset with great difficulties, "the surgeon's knife often turning against himself." He cited the case of a patient who complained of various vague disturbances in the genital region, and who persuaded a skilful surgeon to operate on a by no means troublesome varicocele. The surgeon performed the operation, which was neither useful nor necessary, merely to satisfy the patient. The vague troubles did not cease. The patient pursued the surgeon first with complaints and then with reproaches and finally made an unsuccessful attempt to kill him.

Professors Régis of Bordeaux and Gilbert Ballet of Paris, with Drs. Dupré and Dide of Toulouse, united in depreciating the rôle of surgery in alleged cures of mental disease, which they were inclined to attribute to spontaneous recovery in most cases.

In his reply, Dr. Picqué, while agreeing with the criticisms made on the possible abuses of the surgery of the insane, remarked that these abuses could not be regarded as an argument against such surgery itself.

REVISION OF THE LAW WITH REGARD TO THE INSANE

On the motion of Prof. Gilbert Ballet, the congress unanimously protested against the proposed revision of the law of 1838, now before the senate (THE JOURNAL, May 31, 1913, p. 1719), and especially against the clause requiring judicial procedure before patients are admitted to asylums or sana-

toriums. If it is legitimate and desirable to require a judicial decision in the case of the criminal insane and those who formally protest against being placed in asylums, it would be useless and vexatious to impose such a requirement on other patients who constitute more than 80 per cent. and thus to transform asylums and sanatoriums into prisons, entered only after court procedure.

ORGANIZATION OF INTERNATIONAL CONGRESS OF NEUROLOGISTS, PSYCHIATRISTS AND PSYCHOLOGISTS

The congress passed a resolution looking toward the formation of an international committee to organize an international congress of neurologists, psychiatrists and psychologists.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, Aug. 29, 1913.

Personal

Professor Rieder Pasha died in Bonn, August 29, at the age of 51 years. In 1895 he was assistant to Schede of Bonn, the well-known surgeon, and in 1898 he was called to Turkey as the inspector of the Turkish Medical School for Army Physicians in order to organize this after the German method. He filled his position capably and an account of his work was published with the favorable comment of his early teacher. Schede later had a chance to show his great interest in his pupil. In 1905, Rieder, while going through a new building for the military medical school, which he founded, fell several stories and injured his spine so that it was feared that the injury might be fatal. Schede himself hastened at once to Constantinople and had the good fortune to save Rieder's life, but the latter remained a cripple. His usefulness for Turkey was naturally over and in 1905 he returned to Bonn. There he again took up his work as teacher in the university and became the director of the surgical section of the hospital. The various difficulties with which he had to struggle are described in his book on the work which he did in Turkey.

Professor Neuberg, who for many years has been assistant to Professor Salkowski, has been appointed a demonstrator in the chemistry division of the Kaiser Wilhelm Institute for Experimental Therapy in Dahlem, near Berlin, with the approval of the kaiser.

Women Students in the German Universities

In the twenty-one German universities during the last summer, out of a total number of 60,000 students, 3,436 were women, the highest number that the women students had attained up to this time. Counting such students as attended only a small number of semesters or only a few lectures and did not take the examinations, more than a thousand women attended. The number of women medical students was 790. Most of the women attended the Prussian schools, only 20 per cent. being in Berlin.

A Further Decrease in the Birth-Rate in Prussia

In the first quarter of 1913 the number of births in Prussia was 293,652, which shows a decrease as compared with the same quarter of 1912 of about 10,000, or 3.56 per cent. The country is more concerned in this decrease than the city, but at the same time there were more births in the country proportionately to the general population than in the cities. There were 25.32 births per thousand inhabitants in the cities, while in the country there were 31.4. The number of deaths also has decreased proportionately. There were 162,871 as against 175,818 in the previous year, a decrease of 12,974, or 7.4 per cent. There was thus an increase in the population of about 3,000 over the first quarter of 1912. Of great importance was the decrease in the death of infants, which dropped from 43,721 to 40,440. There were 5,000 less deaths due to contagious diseases than in the first quarter of 1912. As illustrative of the value of the struggle against tuberculosis, there was a decrease in the number of deaths from this disease of 1,700. The suicides increased heavily, from 1,760 to 1,989; also the murders, from 3,672 to 3,945. Marriages also increased. They reached a total of 64,284, that is, 1,500, or 2.61 per cent., more than in the previous year.

Completion of the Plans for Care of Pulmonary Diseases

Toward the completion of the proposed program for the care of pulmonary diseases in Germany, the German Central Committee for the Care of Tuberculosis has named a commission with an auxiliary under the direction of the directors of the Robert Koch Institute, Dr. Gaffky and the directors of the German national insurance body. They are to arrange for a closer union between the 1,500 various German institutions. For the same purpose the *Journal for the Care of the Tuberculous*, published under the direction of the general secretaries, Professor Nietner and Professor A. Kayserling, has arranged to issue 12,000 copies in which will be contained the various regulations of the organizations interested in the care of tuberculosis.

BUDAPEST LETTER

(From Our Occasional Correspondent)

BUDAPEST, August 30, 1913.

Title for Court Physician

Dr. Kerzl, court physician, has had conferred on him the title of "Special Medical Privy Councilor" by His Majesty, Francis Joseph. This is the first time that this title has been conferred here on a medical man. The special appointment is largely due to the personal friendship which His Majesty bears toward his body physician. Among other things this is also shown by the implicit obedience with which the king follows the instructions of Dr. Kerzl. No matter what important meeting or function may be scheduled, if Kerzl advises His Majesty to remain indoors he always obeys, although it is generally known that it is most disagreeable to the king to remain indoors even for twenty-four hours.

Cholera in Hungary

What has been particularly dreaded by medical men of Hungary ever since the outbreak of the Balkan war has at last come to pass: Cholera has spread beyond the borders of the Balkan countries and sporadic cases have been brought into Hungary by soldiers retiring from the Bosnian service. Nominally since the occupation of Bosnia by Austria-Hungary, soldiers recruited in Bosnia are sent to serve in Austria-Hungarian regiments and reversedly Austro-Hungarian soldiers are sent down to Bosnia. This has been done from a strategic point of view. Since the first half of August Bosnian regiments have been kept in readiness and even reservists have been summoned in extremely large numbers. These reservists have been discharged from service in the last two weeks and although the strictest precautions were taken, yet they have brought cholera into Hungary.* The number of cases reported as yet is only six or seven, and in view of the stringent regulations, which are observed not only by medical men but also by lay people in the reporting of cases, it is very probable that the spread of cholera will be checked. Soldiers coming back from Bosnia after a long and severe service, instead of being kept under observation for a few days at the Hungarian border, have escaped. To prevent this the minister of war has ordered that soldiers escaping medical observation will be regarded as deserters, the penalty for which is a punishment service of one or two years.

Marriages

VIOLA L. PENNYPACKER, M.D., Huntington, W. Va., and Mr. William H. Scanland, Jr., of Benton, La., at Jenkintown, Pa., June 26.

HARRY RAYMOND MUTCHLER, M.D., Rockaway, N. J., to Miss Helen Alene Van Cleaf of Asbury Park, N. J., June 25.

JOSEPH EDWARD BROOKSHIRE, M.D., Nowata, Okla., to Miss Anna C. Steward of Glenwood Springs, Colo., August 23.

RUDOLPH F. ROHLFING, M.D., Colorado Springs, Colo., to Miss Cora Ethel Luke, at Sheridan, Wyo., August 14.

ALFRED STAHL, M.D., Newark, N. J., to Miss Martha Lowe of Mendham, N. J., September 3.

JOHN MUNN HANFORD, M.D., to Miss Gwendolen Smith, both of New York City, September 3.

J. B. CHAIKEN, M.D., to Miss Jeannette G. Kirkel, both of Philadelphia, September 7.

EDWIN STANLEY COOKE, M.D., to Miss Anna Barrett, both of Philadelphia, September 1.

NAZARETH A. JERIJIAN, M.D., to Miss Semagule Doodakyan, both of Chicago, August 30.

GEORGE IVES, M.D., to Miss Vivian Loretta Treutle, both of St. Louis, August 18.

BEN VAUGHAN, M.D., to Miss Mamie Agnes Decker, both of Louisville, September 1.

Deaths

Theodore S. E. Schaepkens van Riempst, M.D. University of Ghent, Belgium, 1900; of New York City; a member of the Medical Society of the State of New York; for four years surgeon to the Red Star Line; a member of the staff of the Polyclinic Hospital and Demilt and Hudson Street dispensaries and later chief of clinic of the outpatient department of St. Luke's Hospital and lecturer in genito-urinary surgery at the Polyclinic Hospital; a member of the American Urological Association; was accidentally drowned in Saranac Lake while fishing, August 21.

John Milton Bigelow, M.D. College of Physicians and Surgeons, New York City, 1870; A.B., A.M. and Ph.D. (Hon.), Williams College; a fellow of the American Medical Association; professor emeritus of materia medica, therapeutics and diseases of the throat and nose in Albany (N. Y.) Medical College; at one time president of the Albany County Medical Society and honorary president of the Pan-American Medical Congress; attending physician at the Albany and St. Peter's Hospitals; died at his home in Albany, August 25, aged 67.

Sinkler Nicholas Latham, M.D. Birmingham (Ala.) Medical College, 1897; a fellow of the American Medical Association; formerly chief surgeon of the Sloss-Sheffield Steel and Iron Company; later chief surgeon of the Birmingham Coal and Iron Company at Mulga; division surgeon for the Southern Railway with headquarters at Birmingham; died in a sanatorium in Birmingham, August 31, from nephritis, aged 40.

Joseph Beggs Carter, M.D. Rush Medical College, 1882; a member of the Kansas Medical Society; for eighteen years a member of the Kansas State Board of Health and once chairman of the board; for several years physician of Fort Scott and Bourbon County, and local surgeon for the Frisco and Missouri Pacific Systems; died at his home in Fort Scott, September 2, from nephritis, aged 54.

Elisha Merritt Whitten, M.D. Medical School of Maine at Bowdoin College, Brunswick, 1865; twice president of the Nebraska State Medical Association and at one time professor of gynecology in the University of Nebraska Medical College; a practitioner of Nebraska City for 48 years; died at his home, September 4, from disease of the heart and kidneys, aged 76.

Thomas Edward Pickett, M.D. University of Pennsylvania, 1865; a fellow of the American Medical Association; surgeon in the Army throughout the Civil War; a member of the American Academy of Medicine and a life member of the British Association for the Advancement of Science; died at his home in Maysville, Ky., September 3, from senile debility, aged 72.

Walter E. Russell, M.D. Hahnemann Medical College, Chicago, 1889; a fellow of the American Medical Association; for several terms city health officer and a member of the School Board of Walla Walla; who underwent operation a few weeks ago on account of malignant disease; died at his home in Walla Walla, August 28, from carcinoma, aged 55.

Frank J. Wagenseller, M.D. University of Pennsylvania, Philadelphia, 1878; a member of the Medical Society of the State of Pennsylvania; county inspector for Snyder County for the State Board of Health; a practitioner of Selinsgrove, Pa; died in the Samaritan Hospital, September 5, from uremia, two weeks after a surgical operation, aged 57.

Edwin Rushton Boden, M.D. Long Island College Hospital, Brooklyn, 1880; at one time a member of the common council of Oneida, N. Y.; for fourteen years deputy collector or cashier in the Internal Revenue Service; died at his home in Oneida, August 16, from cerebral hemorrhage, aged 54.

Howard Smith, M.D. University of Pennsylvania, 1871; surgeon, lieutenant, U. S. Navy, retired in 1890 for incapacity resulting from incident of service; assigned to active duty during the war with Spain; died in the Naval Hospital, Norfolk, Va., September 4, aged 65.

Theophilus H. Andress, M.D. College of Physicians and Surgeons, New York City, 1864; a veteran of the Civil War, in which he served as a medical cadet; a practitioner of Sparta, N. J., for nearly half a century; died at his home, August 26, aged 72.

Henry M. Emerick, M.D. College of Physicians and Surgeons, Baltimore, 1880; a member of the Medical Society of the State of Pennsylvania; died at his home in Milton, August 31, from acute indigestion, aged 59.

John Lochner, M.D. New York University, New York City, 1871; for nineteen years a member of the Jersey City Board of Health; for twenty years medical examiner for the Jersey City Fire Department, and for seventeen years city physician; consulting physician to the Home for the Homeless; died at his home in Jersey City, September 3, aged 68.

Samuel Rozier Catts, M.D. Baltimore Medical College, 1906; a fellow of the American Medical Association; for several years a member of the Medical Corps of the Army, and at one time on duty at the National Soldiers' Home, Hampton, Va.; died at the home of his father in Alexandria, Va., August 29, from tuberculosis, aged 36.

Charles W. Maddox, M.D. Louisville (Ky.) Medical College, 1894; a fellow of the American Medical Association; local surgeon in Longton, Kan., for the Santa Fe System; a member of the Atchison, Topeka & Santa Fe Railway Association of Physicians and Surgeons; died at his home in Longton, August 20, aged 41.

Ellwood Maulsby Corson, M.D. University of Pennsylvania, Philadelphia, 1863; a fellow of the American Medical Association; acting assistant surgeon and assistant surgeon in the Navy during the Civil War; for more than 40 years a practitioner of Norristown, Pa.; died at his home, about September 7, aged 71.

George Ansel Edwards, M.D. College of Physicians and Surgeons, New York City, 1877; a fellow of the American Medical Association and a well-known gynecologist of Syracuse, N. Y.; died in St. Joseph's Hospital, September 3, a day after a surgical operation, aged 68.

Philander Sumner Boyd, M.D. University of Tennessee, Nashville, 1888; a member of the Medical Association of the State of Alabama, and for about twenty years a practitioner of Florence; died in New York City, August 30, from disease of the stomach, aged 63.

John Thomas Broughton, M.D. University of Pennsylvania, Philadelphia, 1853; a member of the Medical Association of the State of Alabama and a pioneer practitioner of Butler County; died at his home in Greenville, August 29, from heart disease, aged 83.

George Y. Pierce, M.D. Southern Medical College, Atlanta, 1890; for several terms a member of the Common Council and a member of the Board of Education of Atlanta, and at one time a member of the Board of Health; died at his home, August 25, aged 49.

Charles Edward Keeler, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1879; local surgeon at Lake Mills, Iowa, for the Chicago and North-Western Railway and health officer of Lake Mills; died at his home, August 23, from tuberculosis, aged 59.

Charles Herman Reinsberg, M.D. College of Physicians and Surgeons, New York City, 1900; a graduate both in theology and medicine and a clergyman of the Protestant Episcopal Church; died at his home in New York City, August 27, aged 46.

William H. Busch, M.D. Northwestern Ohio Medical College, Toledo, 1888; for several years infirmary physician of Erie County, Ohio, and later county health officer; died at his home in Sandusky, August 22, from malignant disease, aged 49.

Allison Emery Drake, M.D. University of Denver (Colo.), 1901; at one time professor of foreign languages in Westminster University; for sixteen years a resident of Denver; died in Park Avenue Hospital in that city, August 28, aged 53.

John P. Pardue, M.D. Missouri Medical College, St. Louis, 1880; formerly professor of materia medica and hygiene in the St. Louis College of Physicians and Surgeons; died at his home in St. Louis, August 29, from nephritis, aged 61.

Alexander M. Troup, M.D. University of Buffalo, N. Y., 1900; while answering a sick call a few miles from his home in Holland, N. Y., August 24, was pinned under the seat of his overturned automobile and instantly killed, aged 35.

George T. Wrennick (license, Indiana); for nearly fifty years a practitioner of the state, Philadelphia; a veteran of the Civil War; died at the home of his son in Brazil, August 29.

Henry Janss, M.D. Kentucky School of Medicine, Louisville, 1893; died at his home in Springfield, Mo., August 31, from cerebral hemorrhage, following heat prostration, aged 52.

N. S. Grice (license, Twentieth Judicial District Board, Texas, 1891); died suddenly at his home in Bryan, August 6, from heart disease, aged 58.

Henry Cushman Turner, M.D. New York University, New York City, 1867; of Brooklyn, consulting physician to the Norwegian Hospital; died at the home of his brother in Washington, Conn., August 16, from nephritis, aged 68.

Charles P. Spottswood, M.D. Minnesota Hospital Medical College, Minneapolis, 1888; founder and surgeon-in-chief of the Hankinson (N. Dak.) Hospital and local surgeon of the Soo Line; died in Minneapolis, August 11, aged 49.

George W. Walworth, M.D. Starling Medical College, Columbus, Ohio, 1891; a member of the Michigan State Medical Society; of Reese; who had gone to Rochester, Minn., for a surgical operation; died recently from pneumonia.

Arba Reed Green, M.D. New York Homeopathic Medical College, 1880; pediatrist to the Albany Homeopathic Hospital; from 1871 to 1881 coroner of Rensselaer County, N. Y.; died at his home in Troy, September 1, aged 59.

Harry Murrell Carter, Jr., M.D. Tulane University, New Orleans, 1911; superintendent and proprietor of the Carter Sanatorium, Tucson, Ariz.; died at his home in that city, August 28, from tuberculosis, aged 23.

James Edward M. Lordly, M.D. College of Physicians and Surgeons, New York City, 1868; of New York City; president of the St. George Club of New York; died at his summer home in Chester, N. S., August 21, aged 68 .

Bernard W. Slagle, M.D. University of Pennsylvania, Philadelphia, 1877; of Smith Center, Kan.; while waiting at a station to take a train for Colorado, about August 24, died suddenly from cerebral hemorrhage.

Daniel Aloysius Shay, M.D. Baltimore University, 1901; New York University, New York City, 1904; a practitioner of Brooklyn for ten years; died in Marlborough, N. Y., August 21, from acute nephritis, aged 37.

Frederick Stanton McKinney, M.D. Marion-Sims College of Medicine, St. Louis, 1898; formerly of Leetonia, Ohio, but for a few months a resident of St. Louis; died suddenly in Leetonia, August 19, aged 41.

Margaret S. McNiff, M.D. Hahnemann Medical College, Chicago, 1893; formerly professor of obstetrics in Hering Medical College; died at her home in Chicago, August 21, from heart disease, aged 63.

Theodore Robert Miller, M.D. New York University, New York City, 1886; for seven years chief physician to the City Home, Marshalsea; died at his home in Pittsburgh, September 1, aged 53.

R. Wallace Salisbury, M.D. Chicago Homeopathic Medical College, 1886; formerly a member of the Iowa State Medical Society; died at his home in Estherville, about August 14, aged 53.

Jacob Derx, M.D. State University of Iowa, College of Homeopathic Medicine, Iowa City, 1887; of Kansas City, Mo.; died in Bethany Hospital, Kansas City, Kan., August 8, aged 74.

Elias L. Dagley, M.D. University of Louisville, Ky., 1887; for eighteen years a resident of Oklahoma; died in his apartment in Oklahoma City, August 17, from heart disease, aged 69.

Lucien Fletcher Webb, M.D. Detroit Homeopathic College, 1904; a member of the staff of Grace Hospital, Detroit; died at his home, September 3, from typhoid fever, aged 35.

Charles Patten Clark, M.D. University of Toronto, Ont., 1889; of Buffalo; died suddenly from heart disease while driving his automobile in Buffalo, August 28, aged 49.

Annette H. Waggoner, M.D. University of Iowa, College of Homeopathic Medicine, Iowa City, 1882; of Kansas City, Mo.; died in a hospital in Colorado Springs, Colo., August 7.

Daniel H. Artherholt (license, Ohio, years of practice, 1896), for 49 years a practitioner of Ohio; died at his home in Youngstown, August 27, from heart disease, aged 75.

James Porter Williams, M.D. University College of Medicine, Richmond, 1897; of Richmond; died in the Catawba Sanatorium, August 20, from tuberculosis, aged 40.

Philip S. Fisher, M.D. University of Pennsylvania, Philadelphia, 1868; coroner of Center County; died at his home in Zion, Pa., August 19, from nephritis, aged 68.

Carl P. Friese, (license, Illinois, years of practice) for 48 years a practitioner of Chicago; died at his home, August 28, from cerebral hemorrhage, aged 80.

Orlando Ilstrup, M.D. University of Minnesota, Minneapolis, 1899; died suddenly at his home in Cokato, Minn.; August 12, from heart disease, aged 41.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

CALOX

A Tooth Powder that Qualifies as a Nostrum

"Calox, the Oxygen Tooth Powder," is advertised as possessing "germicidal powers" which make it "the only dentifrice that will actually sterilize the oral cavity."

McKesson and Robbins, the makers, at one time made the claim that Calox gave up free oxygen from the calcium dioxid which the powder contained. In detail, the firm's claims were:

"The basis of the preparation is a carefully selected variety of English Precipitated chalk, rendered slightly saponaceous and delicately flavored and to which is added in proper quantity calcium dioxid. It is this latter ingredient which confers upon CALOX its peculiar cleansing and germicidal properties. Calcium dioxid, like hydrogen dioxid, has the property of giving up oxygen in the nascent state when brought into contact with water or dead organic matter, at the same time forming milk of lime; it is therefore a powerful oxidizing agent, germicidal and antacid."

These claims were misleading, if not actually false. Calcium dioxid is practically insoluble in water and it is only that fraction which dissolves in water that gives up available oxygen. As, even according to the manufacturer's own claims, there was only 2 per cent. calcium dioxid in Calox and as only a minute fraction of that 2 per cent. is soluble, the oxidizing and germicidal powers of Calox must have been practically *nil*.

The claim has further been made that "Calox represents in powder form the therapeutic efficiency of a 2 per cent. hydrogen dioxid solution." A specimen of Calox was purchased in the open market and examined by the Association's chemists. It was found that the powder consisted largely of chalk, a small amount of soap and sugar with some oxygen-yielding substance and the whole flavored with wintergreen. Quantitative determination of the available oxygen showed that Calox contained an amount of oxygen equivalent to 0.8 per cent. hydrogen dioxid instead of the 2 per cent. claimed. In other words, the claim made for Calox was 60 per cent. false. More recently the company admits that its product contains the equivalent of only 1.5 per cent. hydrogen dioxid.

The entire available oxygen-content of Calox was found to be in its water-soluble part. As calcium dioxid is practically insoluble in water, it is evident that the oxygen in Calox is not derived from that drug as has been claimed. As a matter of fact, further examination showed that the essential oxygen-producing constituent of Calox is not calcium dioxid at all but from its properties appeared to be sodium perborate.

In this connection, some quotations from two patent specifications of dentifrices will be of interest. The first is from a patent issued May 17, 1904, to Edward C. Kirk who assigned one-half of the patent to one E. H. Gane and one other person:

"The invention therefore consists in combining with any of the usual well-known or suitable tooth-powder materials. . . . one *of the dioxids* of the alkaline earth metals. . . ."

"I have ascertained that about 2 per cent. of *calcium dioxid* is sufficient to accomplish the detergent and germicidal ends above described." [Italics ours.—ED.]

Compare the foregoing with the following taken from a patent specification issued Oct. 17, 1905, to E. H. Gane, who assigned the patent to the exploiters of Calox, McKesson and Robbins:

"The invention therefore consists in combining with any of the usual well-known or suitable tooth-powder materials,. . . one *of the* percarbonates or *perborates* of the alkali or alkaline earth metals. . . ."

"I have ascertained that about 1 per cent. of percarbonate or *perborate* of the alkali or alkaline earth metals is sufficient to accomplish the detergent and germicidal ends above described." [Italics ours.—ED.]

From the foregoing and from the further fact that the name "Calox" suggests "calcium dioxid," it is evident that Calox belongs in that class of nostrums the composition of which is changed from time to time while the name remains the same.

The later "literature" on Calox dodges the direct statement previously made that the preparation contains calcium dioxid. After stating that Calox contains chalk and castile soap with flavoring, we now read: "and to it is added the oxygen compounds, which form hydrogen dioxid when mixed with water." Nor is this all. The later advertising contains this statement:

"Some manufacturers are offering to the profession 'peroxid powders' or 'peroxid pastes,' which contain metallic peroxids, but which do not contain *available* oxygen, that is, the peroxids are stable and not dissociated when mixed with water."

In other words, McKesson and Robbins charge "some manufacturers" with doing, to-day, just what McKesson and Robbins themselves did at one time.

The patents held by McKesson and Robbins give this firm the exclusive right of manufacturing tooth powders containing peroxids, perborates or percarbonates. It is another illustration of the unfair monopolies that may be secured under our present patent laws.

NATURAL AND SYNTHETIC SALICYLATES

Report of the Council on Pharmacy and Chemistry

With the view of determining the claimed superiority of "natural" salicylic acid and salicylates over the "synthetic" varieties, a practical study of the question was made under the auspices of the Committee on Therapeutic Research of the Council on Pharmacy and Chemistry. The investigations having been completed, the Council adopted the following report and authorized its publication.

W. A. PUCKNER, Secretary.

It has often been stated in medical papers, and particularly in the advertisements of manufacturers, that salicylates prepared synthetically are less effective than those prepared from the oils of wintergreen or birch, the so-called "natural" products, and that synthetic sodium salicylate is much more dangerous. These contentions, if true, should abolish the use of the synthetic products. If, on the other hand, these contentions are unfounded, there exists no good reason for the use of the much more expensive "natural" products.

To settle this question, the Committee on Therapeutic Research of the Council caused a series of investigations to be made. These showed conclusively that:

1. Contrary to certain statements in the older literature, there is no difference in the toxic dose for animals between "natural" sodium salicylate, the most highly purified synthetic, and the cheapest commercial sodium salicylate now found on the market.[1]

2. The evidence for the claimed clinical differences, as found in medical literature, is extremely unsatisfactory and inconclusive.[2]

3. No significant chemical impurities are present in commercial synthetic salicylate.[3]

4. No difference can be detected clinically, either in the therapeutic or toxic effects, if the comparison is made under conditions which strictly exclude personal bias.[4]

The Council therefore concludes that there is no difference in the actions of "natural" and synthetic salicylates, and that statements that differences exist are unfounded.

1. Waddell, J. A.: A Comparative Investigation of the Effects and Toxicity of Sodium Salicylates of Natural and Synthetic Origin, Arch. Int. Med., December, 1911, p. 784.
2. Eggleston, C.: The Relative Value of the "Natural" and the Synthetic Salicylates, THE JOURNAL A. M. A., Dec. 7, 1912, p. 2057.
3. Hilpert, W. S.: The Purity of Commercial Sodium Salicylate, THE JOURNAL A. M. A., April 12, 1913, p. 1137.
4. Hewlett, A. W.: Clinical Effects of "Natural" and "Synthetic" Sodium Salicylate, THE JOURNAL A. M. A., Aug. 2, 1913, p. 319.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ANOTHER CONSUMPTION VACCINE

To the Editor:—I have before me the *Bacterial Therapist*, G. H. Sherman, M.D., Editor, Detroit. He has an editorial on the "Non-Virulent Tubercle Bacillus Vaccine," and reports some wonderful (?) results from it. Please inform me if there is anything to this vaccine, or is this the result of our imported friend Friedmann? C. N. CHIPMAN, M.D., Washington, D. C.

ANSWER.—This "Non-Virulent Tubercle Bacillus Vaccine" has the appearance of being simply another nostrum of the vaccine and serum variety. We have nothing but the word of the promoters regarding not only what it is, but also what it is good for. This fact alone should be sufficient to warrant throwing into the waste-basket "literature" of the kind referred to by our correspondent and published in the house organ of the firm. The reader is led to believe without specifically being told so that this vaccine is the same as, or a modification of, the notorious Friedmann preparation. Thus we are told, "It is claimed that a culture of this tubercle bacillus was originally obtained from a turtle that had tuberculosis . . . " Friedmann's "discovery" being thus hinted at, the Friedmannian source of this active-harmless preparation is stated—still somewhat guardedly—to be " . . . a culture of which bacilli was obtained last March at a hospital in New York City, where the living organism was first administered in this country . . ." How this organism was obtained we are not informed. We do not know whether it came from the original culture or from a patient. If from the latter, nothing is said as to whether it was a direct descendant of the turtle bacillus or one of the patient's organisms, modified by the treatment or otherwise. According to the promoters, the organism proposed as a remedy has been rendered non-virulent by killing it and converting it into a vaccine. So far as we can learn, therefore, the "Non-Virulent Tubercle Bacillus Vaccine" is an attenuation of Friedmann's tubercle bacillus. The experimental and other data offered have the appearance of the "made to order" kind. As we have already stated, the tone of the advertising "literature" discredits it at the outset and its doubtful parentage cannot beget much confidence in its future. There is no reason to expect more of this preparation—agreeing that it is what its promoters think it is—than of the tuberculins already well known. It is to be hoped that physicians will bear in mind recent fiascos in the line of prematurely announced consumption cures and give this Friedmann shadow a wide berth. While there is reason to hope that, if worthless, it may also prove harmless, the present insufficient data are no reason for the abandonment of the present methods.

We presume that this, like so many similar products of questionable value, will be manufactured under a "government license." It is to be hoped that the day is not far distant when Congress will give the Public Health Service authority to withhold a license for preparations of this character; such authority has been conferred on the secretary of agriculture, who can prohibit the interstate shipment of worthless serums, vaccines, etc., which are to be used in the treatment of diseases of animals. Apparently, however, the Public Health Service is forced to grant a license for almost anything provided it is made in a fairly cleanly manner and is put on the market in a sterile form.

TRACHOMA REGULATIONS IN THE DIFFERENT STATES

To the Editor:—As secretary of the Insular Board of Health of Porto Rico, I am interested in knowing which states of the Union have enacted acts regulating the prevention of trachoma. We are anxious to have the data in order to establish an efficient method to prevent trachoma. Our purpose is to know the name of the states, in order to obtain the rules and regulations concerning trachoma. JOSÉ LUGO-VIÑA, San Juan, P. R.

ANSWER.—In those states which have specifically regulated "trachoma," two methods seem to have been adopted. Either the health authorities are vested with power by the state legislature to declare diseases infectious and the like and to require that such diseases be reported, or the state board drafts certain necessary regulations which are subsequently adopted by the state in a legislative enactment. In either case such rules have the force of, or are made, the law of the state.

In Massachusetts, by ruling of the State Board of Health, trachoma was made reportable May 6, 1909; while by Chapter 75, Massachusetts Revised Laws, Section 50, all the physicians of that state must report infectious diseases and the like which come to their attention to the health authorities.

Pennsylvania by Public Laws 1909, p. 855, Section 1, requires physicians to report trachoma either to a local health officer or to the State Department of Health. Osteopaths are likewise required to report these diseases. The state commissioner of health has power to issue any further necessary regulations.

The Texas Sanitary Code was enacted into law, March 3, 1911. All persons infected with trachoma are to be excluded from schools and any similar public place in which persons may congregate unless by a physician's certificate there is sufficient warrant that all dangerous inflammation has disappeared.

The Washington State Board of Health is vested with power to declare a disease infectious and the like. Trachoma is reportable and physicians must, in writing within twenty-four hours, notify the nearest health officer of all such infections.

By Act 125, Laws of Hawaii, 1911, Section 3, trachoma was declared to be infectious, and by Revised Laws, Section 1004, all physicians are required to report the disease to a proper health authority.

A large number of the states have not legislated specifically on this subject. But such jurisdictions have apparently contented themselves with vesting their health authorities with power to take all needful precautions in regard to any dangerous diseases and the like. In a few states, under laws providing for the physical inspection of schoolchildren, parents and guardians are required to furnish proper care in a case in which a child's eyes may become infected or the like, as in Connecticut, Chapter 104, Act 1899, and Chapter 40, Act 1901. In the Sanitary Code of 1911, Louisiana furnishes a good example of vesting the State Board of Health with the necessary power to declare a given disease infectious and the like.

BINET TEST—SUBCUTANEOUS ADMINISTRATION—"INFANTILE PARALYSIS"—RUSSIAN OIL

To the Editor:—Please answer the following:

1. Where can I find the Binet tests for defective children, as modified by Dr. Goddard?

2. What, if any, are the advantages of the subcutaneous method of administering iron, arsenic and strychnin by ampules over other methods of administering these remedies?

3. Is it correct to speak of an adult as suffering from a recent case of "infantile paralysis"?

4. Is there an oil with "Russian-sounding name" now prescribed by best New York physicians "for chronic constipation"? This is the indefinite statement of a recent patient, who seems surprised that I cannot at once state the name of the remedy.

J. E. HEATH, Gardiner, Me.

ANSWER.—1. This method is described in "Modern Treatment of Nervous and Mental Diseases," by White and Jelliffe, Vol. I, p. 158 (Philadelphia, Lea and Febiger, 1913).

2. The subcutaneous method avoids irritation of the stomach or intestines. It may secure more certain absorption. Usually, however, the ordinary method of administration secures the desired results.

3. The disease commonly called "infantile paralysis" has been designated as "acute anterior poliomyelitis." Recent investigations show that the lesions are more extensive than formerly supposed and not confined to the anterior gray matter of the cord. Hence the term "anterior poliomyelitis" becomes inappropriate as it does not cover all cases of the disease. While it seems somewhat absurd, it may, however, be excusable to speak of an adult as suffering from an attack of "infantile paralysis."

4. The oil referred to is probably a proprietary preparation of a paraffin oil. So far as we know, paraffin oil is coming into use in cases of chronic constipation, but we are not sure that Russian oil is now prescribed by the best New York physicians. Liquid petrolatum will serve the same purpose in treating constipation.

SUITABLE METHODS OF ADMINISTERING DRUGS—PALATABLE SOLUTIONS OF VERONAL

To the Editor:—Will you favor me with formulas for making palatable solutions of veronal? C. O. M., Boston.

ANSWER.—The most palatable solutions of veronal are those obtained by dissolving the dose to be administered in a glass of warm milk or in water, as warm as can be drunk, flavored with a little lemon juice. If the patient objects to taking hot drinks, veronal, which requires 150 parts of cold water for solution, may be replaced by the sodium salt of veronal (sodium diethyl-barbiturate) which is soluble in five parts of water at ordinary temperature. This soluble salt of veronal is marketed as veronal-sodium and medinal (see N. N. R., 1913, p. 78). As veronal-sodium has a bitter, alkaline taste it is best given largely diluted with water. Elixirs of veronal and of veronal-sodium may be prepared, but in general the sweet taste accentuates the taste of veronal. These elixirs are also objectionable because of their alcohol content.

To the Editor:—Have you any publications useful for the doctor who dispenses, which will aid him in preparing and dispensing palatable mixtures? Kindly inform me of any such publications and the price. F. J. DODD, M.D., Pembroke, Ontario.

ANSWER.—The following publications contain much information of value to physicians both as to the writing of prescriptions and their compounding:

Beal, J. H.: Prescription Practice and General Dispensing, An Elementary Treatise for Students of Pharmacy, published by the author, Scio, Ohio, 1907.

Fantus, Bernard: A Text-Book on Prescription-Writing and Pharmacy with Practice in Prescription-Writing, Laboratory Exercises in Pharmacy and a Reference List of the Official Drugs, Especially Designed for Medical Students, Chicago Medical Book Company, 1906.

Physicians should have little difficulty in preparing drugs for administration if they will take the trouble to learn the properties—taste, solubility, chemical incompatibilities, etc.—of the remedies which they use and if they will avoid complex mixtures. Thus an understanding of the physical properties of veronal (see preceding inquiry) will readily suggest suitable methods of administration.

TREATMENT OF CONSUMPTION BY WORK AND EXERCISE

To the Editor:—What articles covering work and exercise in the treatment of consumption have appeared recently? M. D. S.

ANSWER.—The following articles have reference to treatment of consumption by work and exercise:

Flinn, J. W.: Rest and Repair in Pulmonary Tuberculosis, THE JOURNAL, Aug. 16, 1913, p. 466.

Teleky, L.: Choice of Occupation with Regard to Tuberculosis, *Wien. klin. Wchnschr.*, March 13, 1913; abstr., THE JOURNAL, April 26, 1913, p. 1336.

Halcomb, S. R. C.: Graduated Labor in Pulmonary Tuberculosis, *Military Surgeon*, February, 1913; abstr., THE JOURNAL, Oct. 26, 1912, p. 1564.

Allan, J. W.: Graduated Labor at Bellefield Sanatorium, *Glasgow Med. Jour.*, January, 1911; abstr., THE JOURNAL, Feb. 4, 1911, p. 384.

Francini, A. P.: Rest, Exercise and Food in the Management of Tuberculosis, *New York Med. Jour.*, Dec. 31, 1910; abstr., THE JOURNAL, Oct. 29, 1910.

Paterson, M.: Treatment of Pulmonary Tuberculosis by Graduated Rest and Exercise, *Practitioner*, January, 1913.

MacCorison, C. C., and Burns, N. B.: Method of Recording Exercise Data in Sanatorium for Consumptives, *Boston Med. and Surg. Jour.*, May 9, 1912.

EFFECT OF EUCAIN

To the Editor:—It is stated by P. LeMee (*Ann. d. mal. de l'oreille, du larynx, etc.*, Nov. 9, 1912) that beta-eucain is a vasodilator. The "American Text-Book of Surgery," 1899, p. 1103, states that "from a clinical point of view, eucain produces just as rapid, profound and lasting anesthesia as cocain, but is less dangerous. Occasionally, however, local gangrene as a result of vasomotor constriction has been observed."

Please advise me which is correct.

P. O. CHAUDRON, M.D., Dothan, Ala.

ANSWER.—Pharmacologists agree in stating that eucain does not constrict the blood-vessels. Hyperemia is produced rather than anemia.

EFFECT OF ALTITUDE ON BLOOD-PRESSURE

To the Editor:—In the Queries and Minor Notes column of THE JOURNAL (Sept. 6, 1913, p. 787) you refer to blood-pressure and the effect of altitude. For six years past we have been studying the effect of altitude on blood-pressure in consumptives at an elevation of 6,000 feet. Our first report was published in the *Archives of Internal Medicine*, August, 1908. This report covered but one hundred cases, but our findings in six hundred cases were reported before the American Medical Association at Minneapolis this year. This article will be published in the *Archives of Internal Medicine* in the near future. We think we have shown conclusively that altitude tends to raise blood-pressure rather than lower it, both in consumptives and in normal persons living at high altitudes. The fact that our studies cover six hundred cases seems to us to offset any former observations, such as Gardner and Hoaglund's, which took into consideration so few patients that the facts can be of little scientific value compared to a larger study.

We at least feel that in referring to blood-pressure work and altitude our findings deserve as much consideration as the references to which you refer.

L. S. PETERS, M.D., Silver City, N. Mex.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF POST-GRADUATE WORK, CONTRACT PRACTICE, LEGISLATION, MEDICAL DEFENSE, AND OTHER MEDICOLEGAL AND ECONOMIC QUESTIONS OF INTEREST TO PHYSICIANS

The Present Legal Status of Osteopathy

Frequent inquiries are received regarding the present laws regulating osteopathy in different states. The study of the efforts made at regulation of this cult by the different state legislatures is most interesting. Early in its development its adherents began agitation for separate boards of examination and license. In nineteen states such laws have been enacted. In others, some kind of compromise or half-measure has been adopted.

Those states now having separate osteopathic boards of examiners, with the date of passage of the present law are:

Arkansas	1903	Montana	1905
Connecticut	1901	Nebraska	1909
Florida	1909	New Mexico	1905
Georgia	1909	New Hampshire	1911
Idaho	1907	North Dakota	1909
Kansas	1913	Pennsylvania	1911
Louisiana	1908	South Dakota	1907
Michigan	1903	Tennessee	1905
Minnesota	1903	Vermont	1909
Missouri	1907		

In twelve states amendments to the medical practice act have been adopted, providing for the appointment of one or more osteopaths on the examining board. These states are:

Arizona	1913	Oklahoma	1907
Indiana	1905	Oregon	1907
Iowa	1902	Texas	1907
Kentucky	1904	Utah	1907
Massachusetts	1911	Washington	1909
New York	1907	Wisconsin	1903

Ten states have enacted laws permitting the state board of medical examiners to examine and license osteopaths either as such or as practitioners of medicine:

California	1913	Ohio	1906
Colorado	1910	South Carolina	1904
Delaware	1907	Virginia	1911
New Jersey	1910	West Virginia	1907
North Carolina	1909	Wyoming	1905

In Illinois, the act of 1911 permits the State Board of Health to examine and license osteopaths at their discretion, but those so licensed cannot use medicine internally or externally, or perform surgical operations. By the revised laws of Maryland for 1902, "masseurs or other manual manipulators who use no other means" are exempted therefrom. This language would seem to apply to osteopaths.

To-day there are but five states in which no legislative steps have been taken to regulate the osteopaths as such:

Alabama	Nevada
Maine	Rhode Island
Mississippi	

Is Osteopathy the Practice of Medicine?

In fifteen states either by judicial interpretation or by statutory enactment, osteopathy is included within the meaning of the term "practice of medicine." These states are: Alabama, California, District of Columbia, Illinois, Iowa, Nebraska, New York, New Hampshire, Nevada, Ohio, Texas, Utah, Virginia, West Virginia, Wyoming. In thirty-two states osteopathy is not the practice of medicine. These are: Arkansas, Arizona, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Indiana, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, New Jersey, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, Washington, Wisconsin. In one state, Maine, it seems that the question has never arisen for judicial interpretation, so that the present status of osteopathy there remains uncertain.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, October 7-8. Sec., Dr. John Wix Thomas, Phoenix.

COLORADO: State Capitol, Denver, October 7. Sec., Dr. David A. Strickler, 612 Empire Building.

GEORGIA: Regular, State Capitol, Atlanta, October 14. Sec. Dr. C. T. Nolan, Marietta; Homeopathic, Atlanta, October 1. Sec., Dr. R. E. Hinman, 106½ Whitehall St.; Eclectic, State Capitol, Atlanta, October 14. Sec., Dr. C. W. Miller, 192 W. North Ave.

IDAHO: Boise, October 7. Sec., Dr. John F. Schmershall, Jerome.

ILLINOIS: Coliseum Annex, Chicago, September 24-26. Acting Sec., Amos Sawyer, Springfield.

KANSAS: National Hotel, Topeka, October 14. Sec., Dr. H. A. Dykes, Lebanon.

LOUISIANA: New Orleans, October 27-29. Sec., Dr. A. B. Brown, 34 Cusachs Building.

MICHIGAN: Capitol Bldg., Lansing, October 14-16. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: University of Minnesota, Minneapolis, October 7-10. Sec., Dr. Thomas S. McDavitt, 814 Lowry Building, St. Paul.

MISSISSIPPI: Jackson, October 28-29. Sec., Dr. E. H. Galloway, Jackson.

MONTANA: State Capitol, Helena, October 7. Sec., Dr. Wm. C. Riddell, Helena.

NEW JERSEY: State House, Trenton, October 21-22. Sec., Dr. H. G. Norton, 429 E. State Street.

NEW MEXICO: Santa Fe, October 13. Sec., Dr. W. E. Kaser, East Las Vegas.

NEW YORK: September 23-26. Chief of Examinations Division, Mr. Harlan H. Horner, Department of Education, Albany.

OKLAHOMA: Muskogee, October 14. Sec., Dr. John W. Duke, Guthrie.

RHODE ISLAND: State House, Providence, October 2-3. Sec., Dr. Gardner T. Swarts.

UTAH: Salt Lake City, October 6-7. Sec., Dr. G. F. Harding, 310 Templeton Building.

WYOMING: State House, Cheyenne, October 15. Sec., Dr. J. B. Tyrrell, Laramie.

Additional Data for, and Corrections of, the Educational Number

The following additions and corrections should be made to the data published in the latest educational number of THE JOURNAL, that of Aug. 23, 1913:

In Table 1, on page 591, the fees charged by the University of Oklahoma School of Medicine for the four years, respectively, should have been $50, $29, $10 and $15. A letter from an officer of the school named states that these are laboratory fees and deposits, no tuition fees being charged.

Also in Table 1, on page 591, in line 45, for the University of Maryland School of Medicine, instead of three graduates having degrees from the college of liberal arts, there were five graduates having such degrees.

On page 582, in accordance with an official statement from the Missouri State Board of Health, the Hippocratean College of Medicine was marked by an asterisk (*), indicating that the school, during its existence, was "not in good standing with the home state licensing board." A letter just received from the secretary of the Missouri State Board informs us that at the time the school merged with the Barnes Medical College of St. Louis, now the American Medical College, a ruling was adopted by which two years' credit might be allowed for the completion of three years' work at the Hippocratean College of Medicine, or one year's credit might be allowed for two courses completed in that school, but that no credit could be given for the completion of one year's work.

In Table 2, on page 594, the second line 91 should have been line 92, Jefferson Medical College, Philadelphia; the figures in the balance of the line are correct.

On page 587, second column, Temple University, Department of Medicine, was included among medical colleges which were to require a year of college work, including physics, chemistry

and biology, for the session of 1913-1914. Later information shows that the requirement will not begin until in 1914.

In the last line on page 587, also, the higher requirement for the state licensing board of California affects all candidates in 1919 and thereafter, or students matriculating for and after the session of 1915-1916.

Michigan May Report

Dr. B. D. Harison, secretary of the Michigan State Board of Registration of Medicine, reports the written examination held at Detroit, May 22-24, 1913. The number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75: The total number of candidates examined was 34, all of whom passed. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
College		
Chicago College of Medicine & Surgery	(1913)	84.8
University of Maryland	(1912)	84.8
University of Michigan, Coll. of Med. & Surg.	(1899)	85.4
Detroit College of Medicine (1913) 78, 80, 81.4, 81.5, 81.8, 81.9, 82.1, 83.5, 83.9, 83.9 84.3, 85.3, 85.5, 85.5, 85.7, 85.8, 85.9, 86.2, 86.6, 86.7, 87, 87.1, 87.2, 87.3, 88.3, 88.8.		
Detroit Homeo. College of Medicine	(1909)	79.1
University of Buffalo	(1910)	90.1
Syracuse University	(1911)	87.6
University of Palermo, Italy	(1884)	75.3
University of Budapest	(1905)	84.8

Michigan Reciprocity Report

Dr. B. D. Harison, secretary of the Michigan State Board of Registration of Medicine, reports that from April 7 to July 21, 1913, 23 candidates were licensed through reciprocity. The following colleges were represented:

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Georgia College of Eclectic Med. & Surg.	(1913)	Georgia
Northwestern Univer. Medical College	(1906) (1911)	Illinois
Chicago College of Medicine and Surgery	(1901)	Illinois
Rush Medical College	(1912)	Illinois
American College of Med. & Surg., Chicago	(1905)	Illinois
Bennett Medical College	(1912)	Illinois
Hahnemann Medical College, Chicago	(1887)	New York
University of Illinois	(1912-2) Illinois; (1912)	Kentucky
Medical College of Indiana	(1903)	Indiana
University of Kentucky	(1906)	New Hamp.
University of Louisville	(1912-2)	Kentucky
University of Maryland	(1902)	Ohio
Univer. of Michigan, Dept. of Med. & Surg.	(1898)	Penna.
American Medical Missionary College, Michigan.	(1902)	Kansas
Toledo Medical College	(1897)	Ohio
Hahnemann Medical College, Pennsylvania	(1908)	New York
University of Texas	(1902)	Texas
University of Vermont	(1911)	Vermont
Marquette University	(1912)	Wisconsin

Iowa June Report

Dr. G. H. Sumner, secretary of the Iowa State Board of Medical Examiners, reports the written examination held at Des Moines, June 2-4, and Iowa City, June 5-7, 1913. The number of subjects examined in was 8; total number of questions asked, 100; percentage required to pass, 75. At the examination held at Des Moines the total number of candidates examined was 61, of whom 59 passed and 2 failed. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
College		
Chicago College of Medicine & Surgery (1912) 79.1, 93.4; (1913) 84.1, 87.6, 91.		
Rush Medical College, Chicago (1899) 79.1; (1913) 87.9, 88.4, 89.		
Northwestern University, Chicago (1908) 82.4; (1912) 90.4; (1913) 89.2, 91.2, 93.5, 95.		
University of Illinois	(1913)	88, 88.7, 89.2
Chicago Coll. of Phys. & Surg.	(1905) 94.2; (1913)	90.4
State University of Iowa, College of Medicine	(1911)	83.1
Drake University College of Medicine (1913) 83.1, 84.5, 85.9, 86.4, 86.5, 86.9, 87.4, 87.5, 87.6, 88.4, 88.7, 89, 89.4, 90.1, 90.4, 90.5, 91.4, 91.5, 91.7, 91.7, 92, 92.1, 92.6, 93.6.		
University of Louisville	(1913)	91.2
Maryland Medical College	(1912)	84.4
Tufts College Medical School	(1909)	95.1
Hamline University	(1897)	85.5
Ensworth Medical College (1913) 82.1, 82.1, 88.5, 89.7 90.		
St. Louis University	(1913)	88.9, 89, 92.9
Columbia Univer., Coll. of Phys. & Surgs., N. Y.	(1910)	91.7
Vanderbilt University	(1913)	87.4

FAILED

Bennett Medical College	(1911)	80.1*
St. Louis College of Physicians & Surgeons	(1906)	66.5

* Fell below 60 per cent. in obstetrics.

At the examination held at Iowa City, the total number of candidates examined was 21, all of whom passed. Five candidates were licensed through reciprocity. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
College		
State University of Iowa, Coll. of Med. (1913) 87.1, 88, 88.9, 89.5, 89.6, 89.9, 90.4, 90.6, 90.6, 91.7, 92.1, 92.2, 93, 94.5, 94.7.		
State University of Iowa, Coll. of Homeo. Med. (1910) 89.9; (1913 87.9, 88.9, 89.1, 90.5, 91.2.		

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
University of Colorado	(1911)	Colorado
St. Louis College of Phys. & Surg.	(1898)	Minnesota
John A. Creighton Medical College	(1912)	Nebraska
Eclectic Medical Institute, Cincinnati	(1897)	Ohio
University of Berlin, Germany	(1903)	W. Virginia

Ohio June Report

Dr. George H. Matson, secretary of the Ohio State Medical Board, reports the written and oral examination held at Columbus, June 2-5, 1913. The number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 172, of whom 168 passed and 3 failed. For one candidate the examination was incomplete. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
College		
Yale Medical School	(1912)	89.1
Harvard Medical School	(1912)	80.3
Johns Hopkins University Medical School (1910) 85.8; (1912) 82.8; (1913) 82, 91.3.		
University of Michigan, Department of Medicine and Surgery (1913) 86.5.		
Detroit College of Medicine	(1913)	79.7
St. Louis University	(1913)	83.9
Ohio-Miami Medical College (1912) 79.5; (1913) 77.1, 78.7, 79.9, 81.2, 81.6, 82.9, 82.9, 83.6, 83.8, 84, 84.3, 84.6, 84.7, 84.9, 85.2, 85.3, 86.3, 86.4, 87, 88.5, 89.5, 89.6, 91.1.		
Starling-Ohio Medical College (1913) 76.4, 80.1, 80.2, 81.1, 81.4, 81.4, 81.5, 81.6, 81.8, 81.9, 82.2, 82.4, 82.9, 83.1, 83.1, 83.9, 84, 84.5, 84.6, 84.7, 84.8, 84.8, 85, 85.1, 85.2, 85.2, 85.3, 85.3, 85.4, 85.4, 85.6, 85.8, 85.9, 86.1, 86.7, 86.8, 86.8, 86.9, 87.2, 87.4, 87.7, 88.2, 88.3, 88.6, 88.6, 88.7, 89.5, 89.5, 89.7, 89.9, 90.9, 92.3.		
Western Reserve University (1913) 81.5, 81.8, 82.1, 83.6, 85, 85.1, 85.4, 86.4, 86.7, 86.9, 86.9, 87.4, 87.7, 87.7, 87.7, 88, 89, 89.2, 89.3, 89.8, 91.3.		
Cleveland College of Physicians and Surgeons (1913) 79.5, 80.7, 82.3, 82.6, 83.3, 83.8, 84.7, 85.4, 86.3, 86.8, 87.9, 88.3, 88.9.		
Cleveland-Pulte Medical College (1912) 75.5; (1913) 75.2, 75.4, 76.5, 77.9, 78, 78.2, 78.3, 78.7, 78.8, 78.9, 79.9, 80.1, 80.6, 81, 82.1, 82.1, 85.3, 88.4, 88.7.		
Toledo Medical College (1913) 76.4, 79.7, 80.3, 80.8, 80.8, 82, 82.5, 82.9, 83.2, 83.9, 85.8, 86.1, 87.4, 88, 89.2.		
Eclectic Medical College, Cincinnati (1911) 78.8; (1913) 75, 76.4, 76.6, 78.1, 80, 81.1, 82.8, 85.5, 86.6, 88.2, 89.2, 89.3.		
University of Pennsylvania	(1912)	91.3

FAILED

University of Louisville	(1911)	65
Starling-Ohio Medical College	(1913)	70.1
Cleveland-Pulte Medical College	(1913)	72.1

The following questions were asked:

ANATOMY

1. Locate and describe the scapula. 2. Give the course and relations of the brachial artery. 3. Give the boundaries of the fourth ventricle. 4. What structures pass through the jugular foramen? 5. Describe the urinary bladder of a male and give its relations.

PHYSIOLOGY

1. Name the principal varieties of connective tissue. Where are they found and what purpose do they serve? 2. State the disposition of the fat principles of food after digestion; carbohydrate principles; effect of alcohol in small quantities with food. 3. What is undestood by absorption? 4. Name four forces concerned in the circulation of the blood. 5. What effects do extremes of temperature have on respiration? What effect has age? 6. Describe the suprarenal capsules. What is their function? 7. What is the influence of the nervous system in the production of sweat? 8. Name the five laws of reflex action (Pflüger). How do they work? 9. Describe the process known as ovulation. 10. Describe the function of the tympanic membrane; eustachian tube.

PATHOLOGY

1. By what agencies does the body protect itself against the entrance and harmful effects of pathogenic bacteria? 2. Describe morbid anatomy of bronchopneumonia. 3. What changes take place in extravasated blood? Name them. 4. What changes take place in an inflamed part, causing redness and swelling? 5. Describe the process of primary healing; of secondary healing.

CHEMISTRY

1. Give properties and chemical formulas of (*a*) carbon dioxid; (*b*) carbon monoxid. 2. Give a test for indican and state its clinical significance when found in urine. 3. Define (*a*) aldehyd; (*b*) alkaloid (*c*) glucosid. 4. Name and differentiate the three classes of sugar. 5. What are proteids and from what are they derived?

PRACTICE

1. Name the different forms of non-malignant stricture of the rectum. How far above the anus is a simple stricture usually found? 2. Describe your procedure in making a physical examination of the abdomen. 3. Describe the urinary findings in diabetes mellitus and chronic interstitial nephritis. 4. Make a differential diagnosis of pleuritic and pericardial effusion. 5. Define and give etiology of neuritis. 6. Give pathology of typhoid fever. Name some of its complications. 7. Give symptoms and management of paranoia. 8. Differentiate between renal and hepatic colic. 9. Give the differential diagnosis of variola. 10. Give the differential diagnosis between paralysis agitans and tabes dorsalis.

SURGERY

1. Discuss acute osteomyelitis. 2. Describe complete inguinal hernia; give symptoms of strangulation and treatment. 3. Name varieties of goiter and mention the indications for surgical interference. 4. What lesions would you consider in a severe injury about the ankle-joint. 5. In an oblique fracture of the lower third of the femur, state the usual position and give the muscular control of the fragments.

DIAGNOSIS

1. State the difference between organic and functional murmurs. 2. Describe method of examining the size of the spleen. 3. What is the diagnostic significance of edema of one arm and hand? 4. Describe rales, mention varieties and state diagnostic significance. 5. What are friction sounds and what do they signify? 6. What pathologic significance has an increased vocal fremitus? 7. What is dyspnea and what does it signify? 8. Describe diagnostic indications from the character of cough. 9. Describe aphasia; name varieties in reference to localized lesions. 10. In what pathologic conditions is ocular paralysis present?

OBSTETRICS

1. State your views with reference to examinations and what you would expect to learn by them. 2. Name some of the causes and give treatment of hemorrhage after labor. 3. How would you distinguish one shoulder from the other, when the hand and arm cannot be reached? 4. Outline general scheme of treatment for persistent and pernicious vomiting of pregnancy. 5. Give diagnosis and management of the third position of the vertex.

DERMATOLOGY, SYPHILOLOGY AND DISEASES OF THE EYE, EAR, NOSE AND THROAT

1. Describe infantile eczema; outline its treatment. 2. Differentiate scabies from prurigo. 3. How do you recognize and treat scabies? 4. Describe the initial lesion of syphilis. 5. Briefly outline treatment of syphilis. 6. What faulty anatomic condition of the eye constitutes myopia, and how can it be corrected by lenses? 7. Describe simple chronic rhinitis. 8. Describe otitis media purulenta and mention possible complications. 9. Describe iritis; give causes and treatment. 10. Describe laryngeal tuberculosis.

MATERIA MEDICA AND THERAPEUTICS (REGULAR)

1. Briefly discuss the serum and vaccine theories. 2. Name four principal serums, give mode of administration, dose and use of each. 3. What drugs would you use in anemic conditions? Write two prescriptions using the drugs named. 4. Mention two intestinal antiseptics. Give therapeutic use and dose of each. 5. Name three hypnotics; indicate use and dose of each. 6. State the physiologic action, use and administration of hot and cold water. 7. Name two cardiac stimulants and sedatives and indicate dose of each. 8. Give the composition of Dover's powder. State its action, use and dose. 9. Give the physiologic action of nux vomica, name its principal alkaloid and state its use and dose. 10. Give the range of indications for the use of galvanism and high-frequency currents.

MATERIA MEDICA AND THERAPEUTICS (HOMEOPATHIC)

1. Briefly discuss the serum and vaccine theories. 2. State physiologic action, use and administration of hot and cold water. 3. Differentiate between bryonia, phosphorus and causticum in pulmonary affections. 4. Differentiate between nux vomica, carbo veg. and pulsatilla in gastro-intestinal diseases. 5. Name three principal alkaloids of opium, give physiologic dose and antidote treatment for poisoning by one. 6. Give leading characteristics for calcarea carbonicum; sabina; mercurius dulcis. 7. Name three hypnotics; give use and dose of each. 8. Give range of indications for the use of galvanism and high frequency currents. 9. Name four principal serums, give mode of administration, dose and use of each. 10. Name two snake poisons and give general indications for their use.

MATERIA MEDICA AND THERAPEUTICS (ECLECTIC)

1. Name some agents used for active hemorrhage. For passive hemorrhage. Give methods of use. 2. In what class of diseases would you prescribe iris versicolor? 3. What symptoms or specific indications call for hacrotys? 4. What is santonin? For what used? Give dose. 5. Give specific indications for apocynum. 6. Give properties, uses and doses of pulsatilla. 7. In what class of diseases and in what form and dose would you prescribe bryonia? 8. In what conditions of the heart would you prescribe digitalis? 9. When is nux vomica to be prescribed? 10. Give range of indications for the use of galvanism and high-frequency currents.

Book Notices

THE MODERN HOSPITAL. Its Inspiration: Its Architecture: Its Equipment: Its Operation. By John Allan Hornsby, M.D., Secretary Hospital Section, American Medical Association, and Richard E. Schmidt, Architect. Cloth. Price, $7 net. Pp. 644, with 207 illustrations. Philadelphia: W. B. Saunders Company, 1913.

Though the authors of this book acknowledge its unfinished character and have anticipated many criticisms which might be made, yet it is a most comprehensive book and covers the large subject of the modern hospital in a most satisfactory manner. The book has reference particularly to the great hospital located in the large city, though the hospital adapted for the smaller city and town has not been neglected; indeed, most or many of the principles applied to the founding, equipment and management of large hospitals are applicable to smaller institutions. It has been the aim of the authors, an architect and a practical hospital manager of many years of experience in one of our large institutions, educated as a physician, to cover the subject from almost every conceivable aspect. The architect for his part has described plans, material and other details of construction and much of the permanent interior equipment of the building. The physician has supplemented this with his ideas of plan and structure and equipment gathered from long experience and much thought on every detail of hospital requirements.

The major portion of the book, of course, is written by the physician, and though the book covers only a little more than 600 pages, the amount of detail in it is really astonishing. It covers the subject of the founding of the hospital and who should be its founders, its character, whether charity, mixed or private, its sources of support, and its running expenses. The latter, together with the cost of construction of the hospital, are discussed not only in a general way, but in detail, giving figures. It is said of the preliminary plans for a hospital that they should not be left to any architect alone, no matter how experienced, but should be discussed by every one interested, so as best to meet the demands for which the hospital is to be adapted. As to the running expenses, the principle is announced that they should be based on the best service and not on the cheapest. Getting down to actual figures, it is stated that the expenses in either a large or small hospital will average about $2.50 per patient per day. The duties of trustees, boards of directors, boards of lady managers, superintendents and heads of departments are discussed in a comprehensive way. On many of these matters, of course, only opinions or general conclusions can be stated, but an attempt is made to view all of the questions from every side, and this is characteristic of the book throughout.

In the matter of the equipment of the hospital, no detail would seem to have been overlooked from surgical operating-room to laundry, from roof-garden and sun-parlor to the vegetable cellar. Here again the experience and preferences of the authors figure largely, and in a multitude of details wide differences would be found in the opinions of different people. Likewise, in the sections on hospital management, the personnel, the hospital staff, hospital interns, head nurses, nurses, etc. These sections are among the most valuable in the book. They are written in a most spirited and interesting manner. Definite opinions are expressed on hospital management, and strong emphasis on all occasions is laid on the necessity for wide authority in the superintendent, who is the general manager of the institution, subject always to the oversight and revision of the board of directors.

Not the least valuable portion of the book is the section on business management, which sets forth complete details of the routine of the business office, referring to the entrance and discharge of patients, the keeping of records and books of account, purchase of supplies, etc.

The subject is such a large one that it is impossible to take up, either to commend or to criticize, many of the details. The book might be criticized, however, on the score of arrangement. It would seem that many of the purely architectural or equipment features of the building, which are discussed in various places throughout the book, might have been brought

together more closely under the one head of structural features. In other respects also the subjects might be brought together instead of being discussed in several different places. These details of arrangement, however, can be corrected in a future edition of the book. Mechanically, it is well executed and is well illustrated.

The authors anticipate a criticism as to the illustration and recommendation of certain apparatus manufactured by certain firms or individuals. In view of the authors' statements in regard to this matter it cannot probably be regarded as objectionable. The book covers so many aspects of a modern hospital that it is in a class by itself. No other work with which we are acquainted has attempted to cover it so completely. A reading of this book could not help but be extremely valuable to municipalities, associations or persons contemplating founding a hospital, and it will prove profitable reading to every one interested in hospital management even though they differ widely with the authors in many of the details.

HOW TO COLLECT A DOCTOR BILL. By Frank P. Davis, M.D. Cloth. Price, $1. Pp. 98. Newark, N. J.: Physicians' Drug News Company, 1913.

This is largely devoted to an abstract of the exemption laws in the different states. A table giving the time limits for accounts in the different states is convenient for reference. One's opinion regarding some of the practical advice will depend considerably on his attitude toward his profession. The advice to physicians to secure an order from a corporation, signed by a responsible person, before rendering service for which the corporation is expected to pay, is thoroughly sound. Many of the suggestions regarding bookkeeping and business methods can be read with profit by many physicians. Few physicians, however, would care to develop dunning letters to the point of referring, in Letter 3, to "the little child of the delinquent debtor, up in heaven looking down with her angelic eyes, wondering why you did not pay the doctor who worked so hard to give her ease." This would hardly do for a stereotyped letter, so it is provided that "if your patients do not die you might speak of the innocent babe who will grow up to womanhood unpaid for." Of course, you might if you cared to, but some physicians would not care to.

A COURSE IN NORMAL HISTOLOGY. A Guide for Practical Instruction in Histology and Microscopic Anatomy. By Rudolph Krause, A.O., Professor of Anatomy at the University of Berlin. Translation from the German by Philipp J. R. Schmahl, M.D. Cloth. Two Parts. Part I. Price $0.75 net. Pp. 86, with 30 illustrations. Part II. Price, $5.50. Pp. 406, with 208 illustrations. New York: Rebman Company, 1913.

This work is published in two separate parts, or volumes. Part I is devoted to the laboratory phase of histology—a description of the microscope, its use and care and general microtechnic. Part II is devoted to the didactic part of histology. This part is divided into lessons, making it particularly suitable as a laboratory guide. The most commendable feature of the work, aside from the arrangement of the subject, are the many beautiful illustrations in black and white and in colors. There can be little original work in a text-book on histology. It is good or bad, depending on the number and value of the illustrations. This work leaves nothing to be wished for. The illustrations are splendid and the student of histology can do no better than to study the illustrations in this book if he would have a good working knowledge of histology. The text supplements the illustrations splendidly.

THE SURGERY OF THE STOMACH. A Handbook of Diagnosis and Treatment. By Herbert J. Paterson, M.A., M.C., M.B. Cloth. Price, $3.50 net. Pp. 312, with 74 illustrations. New York: William Wood & Company, 1913.

The author has written much of value on this subject which, with much more, is gathered together here. Although a surgeon he lays great stress on the value of a chemical analysis of the gastric contents; in fact, he would have the stomach-tube be a part of the armamentarium of every practitioner so that he can carry out the ordinary qualitative tests and estimate the total acidity. He says that the practitioner, be he consultant or otherwise, who, without the aid which such investigation affords, continues to treat the patient suffering from persistent indigestion or gastric pain, is acting unfairly to his patient and unjustly to himself. He believes that the greater use of the stomach-tube would reduce the mortality from stomach cancer, which, he says, can be treated successfully if diagnosed early. The operation of gastrojejunostomy he terms the keystone of gastric surgery, although not a panacea for all the ills to which the stomach is heir. The methods of investigation of gastric cases, the operations on the stomach, and the preparation of the patient for operation and treatment after operation are all described clearly and concisely. About half the book is devoted to the discussion of gastric and duodenal ulcers. The illustrations, though few in number, are well made. The author has presented in an admirable manner much that is of value to the general practitioner as well as to the surgeon. The book is a commendable one.

PREVENTION AND CONTROL OF DISEASE. By Francis Ramaley, Ph.D., Professor of Biology in the University of Colorado, and Clay E. Giffin, B.A., M.D., Instructor in Surgery in the University of Colorado. Cloth. Price, $3. Pp. 386, with illustrations. Boulder, Colo.: The University Store, 1913.

This book is an attempt to describe for the general public the modern conceptions and knowledge of infectious diseases, and their control and prevention. This is done in order to bring before the intelligent citizen facts necessary to make him sympathetic toward the efforts of health officers and charitable organizations in their campaigns for the stamping out and control of disease. Among the subjects described in non-technical language are various infectious types of disease and the bacteriology, when it is known; the germ theory of disease and the life history of micro-organisms; plant and animal parasites; disinfection and disinfectants; the questions of susceptibility, resistance and immunity; the problem of vaccination; wound infections; some of the protozoal diseases, and the reasons for the rules of hygiene and sanitation. We like the idea of the book. There is tremendous general interest in all that pertains to health conditions, and much is published in the lay press, a part of which at least is not presented in a desirable or accurate form. It is essential that the public should have correct information on these subjects and this book is intended to impart this. Progress in the bacteriology of the infections is so rapid that although this book has just come from the press, we can see where revision must soon be made, even if some of the statements should not already be modified.

FOODS: THEIR ORIGIN, COMPOSITION AND MANUFACTURE. By William Tibbles, L.L.D., M.D., L.R.C.P., Medical Officer of Health, Nottingham. Cloth. Price $5 net. Pp. 950. Chicago: Chicago Medical Book Company, 1912.

The composition and purity of foods is everywhere receiving wide-spread attention. The importance of dietetics in the etiology and treatment of disease has long been recognized by the medical profession, but it is only within the last few years that the relation of the subject to the health of nations has been seriously considered. The literature of the chemistry of foods is voluminous and is widely scattered; consequently a work of this kind, which contains a great amount of information concerning the origin, composition and manufacture of foods collected from the literature, will prove of value to all who are interested in dietetics. The work is concerned chiefly with the composition of foods and not with their therapeutic uses. Consequently its value to the general practitioner will lie for the most part in its use as a reference work.

OPHTHALMOSCOPIC DIAGNOSIS. Based on Typical Pictures of the Fundus of the Eye with Special Reference to the Needs of General Practitioners and Students. By Dr. C. Adam, Assistant at the Kgl. Univ.-Augenklinik, Berlin. Translated by Matthias Lanckton Foster, M.D., Ophthalmic Surgeon to the New Rochelle Hospital. Cloth. Price, $6 net. Pp. 229, with 152 illustrations. New York: Rebman Company, 1913.

This valuable work on the fundus pictures has been dedicated to the late Julius von Michel of Berlin. Especial stress is laid on local fundus findings suggestive of the presence of general disease. The consideration of the subject of myopia is unusually thorough and original. Excellent plates in color illustrate the text.

THE CATARRHAL AND SUPPURATIVE DISEASES OF THE ACCESSORY SINUSES OF THE NOSE. By Ross Hall Skillern, M.D., Professor of Laryngology, Medico-Chirurgical College. Cloth. Price, $5. Pp. 389, with 253 illustrations. Philadelphia: J. B. Lippincott Company, 1913.

To set forth in English a thorough and exclusive treatment of the accessory sinuses of the nose has been the author's aim. He seems to have succeeded remarkably well. The book is divided into two parts. In Part I are discussed the anatomy and development of these sinuses, their physiology and bacteriology, the general etiology of sinus disease, the normal mechanism of drainage, cause of chronicity, pathology, symptoms, diagnosis and treatment. In Part II the individual sinuses receive consideration, the frontal, maxillary, ethmoid and sphenoid. The author has endeavored to supply in about 400 pages all that is known of these sinuses, illustrated by many splendid drawings and skiagrams. There are over 250 illustrations, none of which appears to be useless or without value. The book cannot fail to be received with favor. There is also a good and extensive bibliography and the references are placed at the bottom of the page on which they are mentioned, so that there is no need for unnecessary turning of pages in a wild search for a particular reference. Consecutive numbering obviates error and confusion.

FREUD'S THEORIES OF THE NEUROSES. By Dr. Eduard Hitschmann. Authorized Translation by Dr. C. R. Payne, with an Introduction by Ernest Jones, M.D., M.R.C.P. Paper. Price, $2. Pp. 154. Nervous and Mental Disease Monograph Series No. 17. New York: The Journal of Nervous and Mental Disease Publishing Company, 1913.

While Freud's theories are much talked about, but few English-speaking physicians have had the opportunity to acquaint themselves with the essentials of Freud's writings, which are scattered and rather fragmentary. Two books dealing with Freud's theories have recently appeared in English and have received favorable comment in these columns. And now appears a translation of Hitschmann's book, which is an effort at a synthetic presentation of the Freudian theory. Truly, at present there is no excuse for any one to discuss Freud without knowing something about him. Hitschmann, it must be stated, is a close friend and pupil of Freud and especially qualified to give a faithful presentation of both the theory and practice of psychanalysis. The translation is exceptionally good, bearing in mind that the majority of English translations from the German are too literal.

THE RELATIONS OF THE LACRIMAL ORGANS TO THE NOSE AND NASAL ACCESSORY SINUSES. By Prof. Dr. A. Onodi, Director of the Rhinolaryngologic Clinic in the University of Budapest. English Translation by Dr. Dan McKenzie. Cloth. Price, $4.25 net. Pp. 66, with 45 illustrations. New York: William Wood & Co., 1913.

Onodi has established his right to be regarded as authority on nasal relations, and in his latest work on the relations of the lacrimal apparatus to the nose his former high standard is maintained. The previous publications on the anatomy of this region have been far from exhaustive, and it is now especially important to have a clear idea of the anatomic relations, as many new operative procedures on the lacrimal organs are being proposed. The book contains sixty-six pages of text published in the original German, accompanied by the French and English translations, illustrated by photographic plates showing forty-five preparations. The price seems rather large since all the English material in the book could be given in a book one-third the size, with a corresponding reduction in price.

HYPNOTISM AND DISEASE. A Plea for Rational Psychotherapy. By Hugh Crichton Miller, M.A., M.D. With an Introduction by Charles Lloyd Tuckey, M.D. Cloth. Price, $1.50 net. Pp. 252. Boston: Richard G. Badger, 1912.

The author of this little volume is no fanatic on the subject of hypnotism. He appears to have a well-balanced opinion of its possibilities and also of its limitations. The book is a popular exposition of the entire subject and "is addressed to the intelligent layman as well as the open-minded doctor, who, not having studied the subject for himself, is willing to make a preliminary survey of the field." Though the author may be mistaken when he calls hypnotism *rational* psychotherapy, yet it constitutes a distinct and, in some instances, indispensable form of psychotherapy, which medical men should understand, even though it be for the purpose of condemning its universal application. The book constitutes splendid summer reading, not being weighted down with too many technical terms.

ACUTE POLIOMYELITIS (HEINE-MEDIN'S DISEASE). By Dr. Ivan Wickman. Authorized English Translation by Dr. William J. A. M. Maloney, F.R.S. Nervous and Mental Disease Monograph Series, No. 16. Paper. Price, $3. Pp. 135, with illustrations. New York: The Journal of Nervous and Mental Disease Publishing Company, 1913.

The well-known monograph on acute poliomyelitis by Dr. Ivan Wickman has at last been published in English. The translation by Dr. Maloney, though faithful to the German text, is not too literal to distract the reader's attention from substance to form. As indicative of the value of this splendid monograph it may be stated that scarcely a report or a review on acute poliomyelitis appears without repeated references to Wickman's work; indeed, Lewandowsky in his extensive "Handbuch der Neurologie" incorporated the entire monograph as Wickman's contribution to the subject. Of especial value to those wishing to pursue the subject further is the complete bibliography at the end of the volume.

OBSTETRIC AND GYNECOLOGIC NURSING. By Edward P. Davis, A.M., M.D., Professor of Obstetrics in the Jefferson Medical College, Philadelphia. Fourth Edition. Cloth. Price, $1.75 net. Pp. 480, with illustrations. Philadelphia: W. B. Saunders Company, 1913.

When a book of this character has gone to four editions in twelve years, little need be said regarding its worth. The book has been thoroughly revised and enlarged by Dr. Davis. It is printed in large, clear type and the illustrations are, as a rule, admirable. Some of them, however, show the effects of wear through use in various editions. While the subject matter is excellent and up-to-date and the type large and clear, the book is printed on such heavy paper that its bulk and weight are almost oppressive, and it would seem that this defect should be remedied in subsequent editions.

INSURANCE MEDICINE. Being Suggestions to Medical Examiners. By Henry H. Schroeder, M.D., Medical Director, Mutual Life Insurance Company of New York. Cloth. Price, $2 net. Pp. 150. New York: William Wood & Company, 1913.

This little book is a compilation of the "Suggestions to Medical Examiners" which have appeared from time to time in the New York *Medical Record*, and contains many practical suggestions and much good advice for the medical examiner for life insurance. It possesses the additional advantage of being brief. Chapters 6 and 7, on "Completion of the Examiner's Report" and "Fraudulent Practices," are especially interesting and of value to the medical examiner for life insurance.

FORTSCHRITTE DER NATURWISSENSCHAFTLICHEN FORSCHUNG. Herausgegeben von Prof. Dr. Emil Abderhalden, Direktor des Physiologischen Institutes der Universität Halle a. S. Volume VIII. Paper. Price, 15 marks. Pp. 308, with 218 illustrations. Berlin: Urban & Schwarzenberg, 1913.

In this volume the medical reader will find two articles of immense interest. "Our Knowledge of the Oldest Tetrapodes," by F. Broili of Munich, is a profound historical study of the entire subject, profusely illustrated and easily understood. The second article, no less interesting, is the one written by Dr. C. Wesenburg-Lund, Hillerod (Denmark), on "Propagation of Sweet-Water Insects, Their Mating and Egg-Deposition."

DISEASES OF THE EYE. A Handbook of Ophthalmic Practice for Students and Practitioners. By G. E. deSchweinitz, A.M., M.D., Professor of Ophthalmology in the University of Pennsylvania. Seventh Edition. Cloth. Price, $5 net. Pp. 979, with 367 illustrations. Philadelphia: W. B. Saunders Company, 1913.

This edition contains many of the new ideas which time has shown to be important. Among the additions are special paragraphs on trephining in glaucoma, Toti's operation on the lacrimal apparatus, rosacea keratitis, and Widmark's conjunctivitis.

Medicolegal

Medical Services Necessaries of Life—Husband and Wife Liable for Them When Furnished to Minor Children

(Evans vs. Noonan and wife (Cal.), 128 Pac. R. 794)

The District Court of Appeals, Third District, California, holds that medical services are legally included among the necessaries of life and that parents are liable for them as such when furnished to their minor children. The court says that whether medical services are "necessaries of life," within the legal meaning of that term, is a question which has never been, so far as the court is advised to the contrary, presented to and decided by the courts of that state. At any rate, the court was cited to no recorded decisions in which the question has been passed on. But on principle it can imagine no reason why medical services should not be so considered. To the contrary, a ruling holding them not to be so would appeal to its mind as barbaric both in its conception and conclusion. It is not possible that any court would hold that the obligation of parents to furnish their minor children with the necessaries of life is fully satisfied when they have provided them with food, clothing and shelter, or, to state the proposition in another form, that parents would not violate their obligation to provide their minor children with the necessaries of life by refusing them requisite medical attention when ill.

The word "necessaries," as it has been applied by some of the cases in which its legal import has been interpreted, is a relative term and, as so applied, has been restricted or enlarged in the scope of its legal signification according to the circumstances and conditions of the parties. Some of the cases have held that it is not confined in its application merely to what is essential barely to support life, but that it includes many of the conveniences of refined society, such as ornaments of dress which are usually worn by persons of rank and position. In the present case, however, there was nothing which required the court to go further than to say that, under the law, it most certainly at the least means the common necessaries of life or such things as are proper and requisite for the sustenance of man. With equal certainty these include, besides food, clothing and shelter, such medical attentions in cases of illness as are absolutely requisite to relieve physical suffering and pain and to overcome or conquer disease, if by such attentions it can be done.

Medical services being counted among the necessaries of life, the court further holds that the wife is equally liable with the husband for the payment for such services when the same are rendered to and for their minor children at the request of her husband only, under the terms of section 171 of the Civil Code of California, which, as amended by the legislature of 1905, provides that: The separate property of the wife is liable for the payment of debts contracted by the husband or wife for the necessaries of life furnished to them, or either of them while they are living together, provided that the provisions of this act shall not apply to the separate property of the wife held by her at the time of her marriage or acquired by her by devise or succession after marriage.

The law applicable to the case before the court as made by the pleadings and proof was correctly stated in a requested instruction of the jury that, "in case you find from the evidence that the plaintiff at the request of either Mr. or Mrs. Noonan furnished and performed medical services and attendance to and for one of their minor children, it is the same as though the medical attendance was furnished to defendants themselves, for both parents are responsible for the care of their minor children and necessaries of life furnished to a child is deemed to have been furnished to the parents. While ordinarily a wife is not responsible for any debt of her husband, the law makes an exception in the case of necessaries of life furnished to either or both of them while they are living together as husband and wife. You are instructed that medical attendance, when furnished to a wife, husband or minor child, is deemed by law to be necessaries of life. Therefore, if you find from the evidence that at the time set forth in plaintiff's complaint the plaintiff furnished medical attendance to defendants, or either of them, or at their request to any of their minor children, and that at said times the defendants were married and living together as husband and wife, it is your duty to find for the plaintiff in whatever amount you may find from the evidence is due to him."

Validity of City Ordinance Providing for Good Inspection

(Keiper vs. City of Louisville (Ky.), 154 S. W. R. 18)

The Court of Appeals of Kentucky on a rehearing reverses a former decision dismissing the appeal, and affirms a judgment imposing a fine of $25 on the appellant Keiper for violating a city ordinance in refusing to allow a health officer to make an inspection. The ordinance was one to prevent the manufacture and sale of impure foods and provided that, "Any officer, agent or employee representing the health department, or police officer, of the city of Louisville shall at all times have right of entry for inspection to any building, premises or place of any kind where food products are stored or kept for sale, and to any wagon, railroad car or other vehicle of any kind used for the conveyance of food products to be sold in the city of Louisville; and such officer, agent or employee shall at all times have the right to inspect all apparatus, appliances, utensils or other equipment to be used in connection with the production, handling, transportation or distribution of food products to be sold or offered for sale in the city of Louisville, and such officer, agent or employee shall have the right at any time to take samples of food products therefrom for the purpose of analysis. No person, shall interfere with such health officer or with any agent employee in performance of his official duty when such person has reasonable grounds for recognizing said health officer or agent or employee in his official capacity, nor shall any person hinder, prevent or refuse to permit any inspection or examination aforesaid," etc. The court says that while, under the constitution, the people must be secure from unreasonable search, there was nothing in the record to show that an unreasonable search was imposed on the appellant. In its exercise of the police power to prevent the sale of impure foods, the city may at least provide for the inspection of such foods by a competent inspector, in places where they are offered for sale. An ordinance providing for such inspection does not violate the constitutional provision as authorizing an unreasonable search, and as there was nothing in the record to show that more than this was done, in the case before the court, it must, in the absence of a bill of exceptions, presume that the circuit court ruled correctly. If the ordinance as to the offense with which the appellant was charged was void, so far as it authorized imprisonment, that was no reason why the valid part of the ordinance should not be enforced.

Plaintiffs May be Asked if Willing to Submit to Physical Examinations—States Permitting Examinations

(Chicago, Rock Island & Pacific Railway Co. vs. Hill (Okla.), 129 Pac. R. 13)

The Supreme Court of Oklahoma holds that, in the trial of a personal injury case, on the cross-examination of the plaintiff he should be required to answer the question whether he is willing to submit to a physical examination of the injuries by reputable physicians of the community, acting under the appointment of the court. The court says that the trial court declined to permit such a question to be asked or answered. This ruling was based on the decision of the Supreme Court of the territory of Oklahoma, in *City of Kingfisher vs. Altizer*, 13 Okla. 121, holding that "the courts of this territory cannot order a plaintiff, in an action for an injury to the person, to submit to a surgical examination in advance of or during the trial of the cause." The case was correctly decided, for it followed a decision of the Supreme Court of the United States (*Union Pacific R. Co. vs. Botsford*, 141 U. S. 250), the decisions of which were controlling on the territorial court.

Whether this court would follow that rule now it does not say, because not a question here before it to decide. But it

notes in passing that the courts of the following states permit such a physical examination: Alabama, Arkansas, Colorado, Georgia, Indiana, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Pennsylvania, Ohio, Texas, Washington and Wisconsin; in Florida, New York and New Jersey such examination is provided for by statute. In the federal courts and those of Utah, Massachusetts, Montana and South Carolina, an examination is denied.

The question before the court was, not whether a physical examination may be ordered by the court, but whether the plaintiff, on cross-examination, may be asked the question whether he is willing to submit to a physical examination, conducted by impartial physicians appointed by the court. The purpose of a cross-examination, among other things, is to test the truthfulness of the witness, and, if he is the plaintiff, his good faith, the righteousness of his case. In an action for personal injuries it is manifest that the jurors are entitled to all the information which can be produced, not only on the cause of the injuries, but also the extent of the injuries, in order to determine whether the plaintiff should recover at all, and, if so, the amount of his recovery. Would an examination of the injuries by competent and disinterested physicians, appointed by the court and acting under its supervision, aid the jury in ascertaining these facts? Manifestly it would, and the jury would doubtless rely more on the testimony of such a physician than they would on one employed as an expert by one of the interested parties. Would the plaintiff be prejudiced by such an examination? Manifestly he would not, if his case was a bona fide one, and if it was not bona fide the law should not exert itself to assist him in concealing the bad faith. Such an examination, it is manifest, would be in the interest of truth and justice. If the plaintiff declined to submit to it for good reason, he, of course, could explain his reason to the jury. If he declined to submit to it without reason, that fact would doubtless have its influence as affecting his good faith, and it seems to the court that such a question would tend to assist the court and jury in arriving at the truth and would result in no harm to any party asserting a bona fide claim.

Indeed, the very case of *City of Kingfisher vs. Altizer*, 13 Okla. 121, relied on by the plaintiff, recognizes the principle here announced, as does also the case of *Union Pacific R. Co. vs. Botsford*, 141 U. S. 250, which was followed in the Altizer case. On the authority, therefore, of the very cases which deny the right to a physical examination, this court holds that the unreasonable refusal of the plaintiff to submit to one may be considered by the jury as affecting his good faith.

Validity of Ordinance Against Having Unclean Milk Bottles

(People vs. Frudenberg (N. Y.), 140 N. Y. Supp. 17)

The First Appellate Division of the Supreme Court of New York affirms a conviction of the defendant, a driver for a milk company, of having in his possession and having received milk bottles which had not been washed after holding milk, and were unclean. The court says that the evidence would support a finding that the defendant had collected a large number of used milk bottles, some of which had not been washed, that he had taken them to a railway station at Park Avenue and One Hundred and Sixty-Fourth Street and unloaded them on the platform, where they were stacked up. About two hours later the bottles, including the unclean ones, were loaded on cars. The milk company had a cleaning plant at Manhattan Street, and the reason why the defendant did not take the bottles there was that it was out of the way. The defendant made no question as to the facts, contenting himself with attacking the constitutionality of the ordinance under which he was prosecuted, which read as follows, the part attacked being the last sentence: "It shall be the duty of all persons having in their possession bottles, cans of other receptacles containing milk or cream, which are used in the transportation and delivery of milk or cream, to clean or cause them to be cleaned immediately on emptying. No person shall use or cause or allow to be used any receptacle which is used in the transportation and delivery of milk or cream for any purpose whatsoever other than the holding of milk or cream, nor shall any person receive or have in his possession any such receptacle which has not been washed after holding milk or cream or which is unclean in any way." The defendant urged that, on a strict construction of the section, and both sides agreed it should be so construed, it was unreasonable, in that it made it an offense for the milk company to reclaim or retake its own property, if some one else had violated a duty with regard to it. The court has no doubt that this strict construction is precisely what was intended by the board of health, and it fits perfectly with the agricultural law, to which it is merely supplementary. The court is of the further opinion that the sentence objected to is not unreasonable, and is within the police power of the state. It does not deprive the milk company, the defendant's employer, of its property, but merely requires the company, before accepting a bottle or other receptacle from a customer, to insist that that customer shall observe the law and wash out the receptacle. This can be done either by ceasing to deliver milk to a customer who refuses to obey the law, or by lodging an information against the persistent law breaker. That the company had provided a sterilization plant to clean bottles and receptacles did not meet the requirements of law, especially when the bottles were not taken to the plant, but were shipped away in an unclean condition. Both the statute and the ordinance are undoubtedly drastic, but the danger to be apprehended from the use of unclean receptacles for milk intended for human food is so obvious and so well known that drastic measures to prevent the possibility of such use are reasonable and justifiable.

Right of Recovery for Services Though Not Beneficial

(Hall vs. Mooring (Ga.), 76 S. E. R. 759)

The Court of Appeals of Georgia says that this was a contest between two members of the gentler sex. The plaintiff was a practitioner of the art or science of osteopathy, and the defendant either needed, or thought she did (which was the same thing) the services of the plaintiff. Several visits were made at $3.10 per visit, the ten cents being added for street-car fare, and the whole bill amounted to $27.90. The defendant said that she paid all she really owed and that the plaintiff charged her for a number of social calls, during the course of which the defendant was importuned to continue the treatment. The defendant said that she declined to do so and that the services rendered by the plaintiff gave her no relief and were so unsatisfactory that she was forced to resort to a physician of the allopathic school, who administered pills and mixtures in the good old-fashioned way. On the issues of fact the plaintiff outswore the defendant, or at least the jury in the justice's court thought she did, and the judge of the superior court refused to interfere. This was the end of the law so far as this branch of the case was concerned. It would never do to hold that a doctor is entitled to recover only where he cures the patient. If the court did, the members of this learned profession might hesitate to respond in extreme cases where the chances were against them. So far as this court is concerned, the doctors may continue to bury their mistakes and recover for their services as they have always done. If the court were dealing with lawyers, the rule might be different. The defendant said that she ought not to pay the extra ten cents per visit because the plaintiff usually walked. The plaintiff testified, however, that the charge was usual and reasonable. If so, she had a right to walk and save the ten cents.

An Expert Has No Greater Privileges than Any Other Witness

(Dixon vs. State (Ga.), 76 S. E. R. 794)

The Court of Appeals of Georgia holds that only when expressly provided by law can the privilege of a witness resist the demand of justice for the truth and the witness refuse to answer a legal question. A physician is competent to testify as an expert and no expert can refuse to testify because he has not been compensated or will not be compensated for his testimony. An expert, testifying as a witness, has no greater privilege than any other witness.

Society Proceedings

COMING MEETINGS

Am. Academy of Ophthal. and Oto-Laryn., Chattanooga, Oct. 27-29.
American Association of Railway Surgeons, Chicago, Oct. 15-17.
American Roentgen Ray Society, Boston, Oct. 1-4.
Colorado State Medical Society, Glenwood Springs, Oct. 7-9.
Delaware State Medical Society, Dover, Oct. 13-14.
Idaho State Medical Association, Pocatello, Oct. 9-10.
Indiana State Medical Association, West Baden, Sept. 25-26.
Medical Association of the Southwest, Kansas City, Mo., Oct. 7-8.
Minnesota State Medical Association, Minneapolis, Oct. 2-3.
Mississippi Valley Medical Association, New Orleans, Oct. 23-25.
Nevada State Medical Association, Reno, Oct. 14-16.
New Mexico Medical Society, Albuquerque, Oct. 2-4.
Utah State Medical Association, Salt Lake City, Sept. 23.
Pennsylvania State Medical Society, Philadelphia, Sept. 22-25.
Vermont State Medical Society, Burlington, Oct. 8-10.
Virginia Medical Society, Lynchburg, Oct. 21-24.
Wisconsin State Medical Society, Milwaukee, Oct. 1-3.

KENTUCKY STATE MEDICAL ASSOCIATION

Sixty-Third Annual Meeting, held at Bowling Green, Sept. 2-4, 1913

The President, Dr. W. O. Roberts, Louisville, in the Chair.

Officers Elected

For the list of newly elected officers, see THE JOURNAL, Sept. 13, p. 877.

The Vaccine Treatment of Pertussis in Children

DR. H. A. DAVIDSON, Louisville: I have been using a vaccine made from the *Bacillus pertussis*, discovered by Bordet, in an epidemic of whooping-cough among the children of the Kentucky Children's Home. More than fifty cases developed during the epidemic. One patient had received doses of the pertussis vaccine at four-day intervals, which controlled the paroxysm fairly well, but a bronchial cough continued. One-fourth c.c. of a mixed vaccine containing *Bacillus pertussis*, 50,000,000; *Staphylococcus aureus*, 20,000,000; *Streptococcus pyogenes*, 10,000,000; *Micrococcus catarrhalis*, 30,000,000, was injected, and within twenty-four hours there was a marked change in the cough, which soon subsided.

As to the value of pertussis vaccine as a prophylactic, I can produce very little evidence. One infant 10 days old was given 1 to 3 c.c. on arrival in the home. It was afterward exposed constantly to the infection. Within a week, it developed a slight cough, not paroxysmal, which quickly subsided. She was given the doses of vaccine four days apart, first, 1 to 3 c.c.; second, 2 to 3 c.c., and third, 1 c.c. or 20,000,000. The vaccine now on the market contains 50,000,000 bacilli per cubic centimeter and relatively larger doses are given for curative effect.

Altogether in hospital and private practice I have treated about seventy cases of whooping-cough with the vaccine with uniformly good results, in many cases brilliant results.

There is practically no reaction, either local or general, following the injection of the pertussis vaccine. There is a slight reaction both local and general following the introduction of the mixed vaccine. As a rule, three doses are sufficient to cure the whooping-cough. If a cough continues after three doses, then give 1 to 4 c.c. of the mixed vaccine, and if this does not stop the cough look out for tuberculosis glands and make the tests for tuberculosis. I have had such uniformly good results from the vaccine treatment that I heartily recommend it to the general profession as the best known treatment for pertussis.

DISCUSSION

DR. LILLIAN H. SOUTH, Bowling Green: Pertussis serum supplied by the State Board of Health of Kentucky costs $1.20, if ordered through the board. The initial dose is 25,000,000. The treatment of whooping-cough with this serum has proved satisfactory in my hands. I have used it in two cases as a prophylactic measure. Late in the disease it is better to give a large dose.

DR. PHILLIP F. BARBOUR, Louisville: I have been treating whooping-cough with the pertussis vaccine for nearly two years and have obtained very brilliant results in some cases. The earlier it is administered, the better the results are going to be. I have not seen such favorable results from the vaccine after the whooping has been established as I have seen when it was used before the cough had reached that stage. It would seem that the germs tend to lose their virulency or disappear early in the stage of pertussis. A culture has to be made from an organism obtained from the throat, and practically with the beginning of the whooping, in order to be able to make a culture at all. There are some cases in which the vaccine does not seem to give the results that we desire. While it is not a specific in all cases, it is the best treatment we have for this condition up to the present time. As a rule I give 50,000,000 as an initial dose, repeating the dose every fourth or fifth day.

Epidemic Anterior Poliomyelitis

DR. PHILIP F. BARBOUR, Louisville: The treatment must be adapted to the stages of the disease. At the outset we should attempt to lessen the congestion of the cord by any means available. The application of counterirritants will bring the blood to the surface and away from the congested area. Ergot has been recommended to reduce the size of the vessels, but it does not produce a great effect. Atropin, by sending the blood to the periphery, should prove helpful enough to redden the skin. The use of electricity on the nerves and muscles offers more help and hope than any other agent. Some massage is helpful by promoting the circulation through the muscles. Strychnin and all other forms of tonics and general tonic medication should be continued. Special attention should be paid to the deformities which result from atrophy and loss of control of the muscles. Much can be accomplished by persistent insistence on the patients trying to use any muscle fibers that can be moved voluntarily.

DISCUSSION

DR. S. L. BEARD, Shelbyville: In regard to the use of strychnin in this condition. It is a disease of impaired nutrition, a bad heart with interference of the blood-pressure. The continued use of strychnin will invariably do harm. In fact, I do not know of a more dangerous drug than strychnin. Strychnin does not contract the arterioles; it expands them, and when given continuously is as dangerous as alcohol. It should be condemned most strongly. In the equalization of blood-pressure lies our greatest hope. How are we to do that? First, by systematic rest after the acute symptoms have subsided. Second, by the proper application of hydrotherapy, by proper elimination, and not too active catharsis. Let us regulate blood-pressure so as to improve the nutrition of the parts, for in that lies our greatest hope until something shall have been done along specific lines.

DR. JOHN J. MOREN, Louisville: It has been my misfortune to see a number of cases of anterior poliomyelitis. The cases of this disease we are meeting to-day are not the same as those we met fifteen or twenty years ago. The cases of poliomyelitis to-day have sensory symptoms, and one of the characteristic features is pain at the onset along with the paralysis, and a particular characteristic I have noticed in Kentucky is that after the fever subsides there is marked hyperesthesia of the paralyzed extremity. In early cases I have used hexamethylenamin with excellent results.

DR. A. C. L. PERCEFULL, Louisville: Along the line of deformities occurring from infantile paralysis, I would like to utter one word of warning. Mothers are overanxious when their children have this condition, and they are willing to grasp at every straw, some of them believing that the children will go through their whole lives with a deformity. It is this anxiety on the part of the mother which leads to exaggeration of the deformity coming from infantile paralysis. This is brought about by the taking of remedies from each family that prescribes a remedy; by using this or that battery or this kind of massage. The muscles that are not paralyzed are overdeveloped and the deformity caused by the paralysis is hastened and the opposite condition results. If you can select a muscle that is paralyzed and apply the galvanic current, you may do some good.

DR. A. M. VANCE, Louisville: If you overstimulate the muscles that are left, thereby causing them to become stronger,

there is a greater chance for deformity to develop. My experience is that infantile paralysis gets well through the efforts of Nature, and all the efforts we may make are wasted until it comes to the question of deformity. I do not believe in electricity nor in massage. The nerve cells are destroyed; therefore you cannot do much good. If you can put the muscles into action, you can achieve much better results.

Diagnosis and Medical Treatment of Gastric and Duodenal Ulcer

DR. CHARLES G. LUCAS, Louisville: Three indications are to be met: first, neutralize any excess of acid; second, prevent spasm, and third, promote healing. The first indication is met by the use of antacids, particularly magnesium oxid and bicarbonate of soda. These may be given in doses of from 10 to 30 grains, in powder form, whenever the patient begins to feel uncomfortable, repeating three or four times a day, according to the indication.

In the treatment of hemorrhage, the first requisite is absolute rest, best secured by morphin given hypodermically and repeated if necessary. The application of a light ice-bag to the epigastrium aids in the checking of the flow of blood. The use of ice-water by tube is recommended by Ewald; in this country Kaufman has been a warm advocate of lavage, believing that thorough evacuation of the contents of the stomach will do more to quiet the organ and stop the bleeding than any other measure. Internally good results have been obtained from epinephrin in repeated doses; from bismuth, in divided doses and in one large dose after lavage. Pure aluminum metal ground into powder and mixed with glycerin into an emulsion like paint, 160 grains to the dose, will almost magically stop hemorrhage from the stomach, except that coming from large vessels. Normal horse-serum has been used extensively and many favorable reports are made concerning it.

How long should an ulcer be treated? I have long been of the opinion that a patient the subject of gastric or duodenal ulcer should submit to the rest cure for at least six weeks. If at the end of that time the symptoms have disappeared or have greatly improved, it is advisable to have him resume his ordinary vocation, but under regular and careful medical observation. If, however, after the first six weeks, when the patient is up and about, he does not regain his strength as we should expect, the cure should be tried again for another six weeks, and after this we have little or no improvement and occult blood is still present in the stool, it is best to refer him to the surgeon.

Diagnosis and Indications for Operation in Gastric and Duodenal Ulcer

DR. A. DAVID WILLMOTH, Louisville: The surgeon should operate in the following cases: First, when the symptoms are long continued and do not yield to medical treatment, and particularly when profound anemia results from the repeated hemorrhage; second, to control bleeding that threatens life; third, when perforation has occurred; fourth, to treat subphrenic and other abscesses that occur as complications; fifth, to relieve constriction of the pylorus or an hourglass contraction; sixth, to relieve various indefinite symptoms, not necessarily due to the existence of the ulcer, but following the healing of one. These symptoms are generally due to adhesions which either alter the direction of the pylorus, constrict the stomach, or tie the organ down to surrounding structures.

DISCUSSION

DR. WILLIAM H. WATHEN, Louisville: Medical diagnoses of gastric ulcer are more often incorrect than they are correct. Moynihan has pointed out that over 50 per cent. of cases of medical diagnoses of gastric ulcer had no ulcer at all. The pathology was found in the appendix. There is no way of knowing positively the pathology of gastric or duodenal ulcer until the abdomen is opened. It is difficult often to differentiate between gastric ulcer and appendicitis. There is often an association of appendicitis with gastric and duodenal ulcer and gall-stones, so much so that there seems to be reason to believe there is some etiologic connection. Acute ulcers, unless complications arise, are seldom surgical and they are very often of septic origin. There is no curative treatment for chronic ulcer except excision. Medical treatment may mitigate the symptoms, but it does not effect a cure. Rest, quietude of mind and body, proper diet, good hygiene and sanitation will do as much as any medical treatment.

DR. W. W. ANDERSON, Newport: About a year ago I was called in consultation to see a patient who gave a history of twenty years of chronic gastric hyperacidity, six years of which gave evidence, according to the history of attacks, of ulceration, with hemorrhage, pain, and in the last six months or more there were obstructive symptoms indicating the presence of cancer, ending in perforation and death. Such things ought not to occur. More careful study and examination on the part of the man who first sees the case would be the means of saving lives in cases of this kind. I would make a plea for more exploratory incisions in doubtful cases to determine what the real trouble is. There should be more cooperation in the handling of these cases between the surgeon and internist.

DR. J. GARLAND SHERRILL, Louisville: I must differ from Dr. Wathen's contention that the only treatment for chronic ulcer of the stomach is excision. I will admit that the ideal treatment for this condition is the removal *in toto* of the ulcerated area, but many of these cases will show very marked improvement and permanent recovery from simple gastro-enterostomy. This is especially the case where the ulcer is large, and where the difficulties of its removal are such that the patient will be unable to withstand a more radical operation. These cases have in many instances gone on to cure. Therefore, I do not believe it is correct to claim that these cases must be subjected to the removal of the ulcer. When the ulcer can be removed surgically, it is a very desirable thing to do.

DR. LOUIS FRANK, Louisville: There is practically very little difference of opinion as to the line of treatment that should be carried out in chronic ulceration of the stomach. We know that these ulcers, benign though they be in the beginning, ultimately become carcinomatous. We have been taught to depend too much on laboratory diagnosis at the expense of the clinical study of the case. A careful study of the previous history of the patient extending back over years is sufficient, with the physical examination, exclusive of laboratory findings, to enable one to make a diagnosis, and then treatment will depend on judgment as to the duration of the disease.

The Prevention of Tuberculosis

DR. DUNNING S. WILSON, Louisville: The prevention of tuberculosis is not to be accomplished by antituberculosis organizations alone, no matter how excellently they may be managed. We must request the intelligent cooperation of physicians, sociologists, lawyers, employers, employees, charitable organizations, federations of men's and women's clubs, playground leagues, tenement house commissions, law makers, boards of education, public health officials, churches, and in fact every citizen of the state. The prevention of the white plague must go hand in hand with the prevention of the black plague, the prevention of hookworm, cancer, typhoid, infantile diseases, poverty, drunkenness, abortion, blindness, feeble-mindedness, insanity, accidents, dishonesty, crime, crop failures and the wanton and improvident destruction of our forests, or the wasteful dissipation of our natural resources, whether by individual or corporation. Finally, the warp and woof of such a scheme must be the leaven of human kindness and a sympathy which is a motive and not an emotion.

Uterine Hemorrhage and Its Significance

DR. R. C. MCCHORD, Lebanon: We do not see the great majority of cases of cancer of the uterus until a slight irregular hemorrhage appears, and on investigation it is found that this condition has existed for weeks and even months. Its approach is so insidious, and the innate modesty and ignorance of women as to its dangers so great, that the so-called inoperable cancer is frequently found to exist. Women must be taught that any unusual flow of blood, which is persistent, means something, and on the first manifestation of such a condition they should apply to their physician for examination and advice. If physicians would realize that one out of every eleven women of all ages dies of cancer, and that past

the age of 35 one woman out of nine would likewise perish, and at the same time consider that its early recognition is the only hope of cure, probably we would be more earnest in our endeavors to educate our clientele as to its dangers, and make them realize the significance of uterine hemorrhage.

DISCUSSION

DR. W. W. ANDERSON, Newport: Uterine hemorrhage during the child-bearing period is most often due to non-malignant causes, but the fact that it is due to such causes gives us no right to presume in any individual case that the conditions are non-malignant and demands on our part the most searching care, because as Baldy of Philadelphia said a few years ago, only 2 per cent. of cases of cancer of the uterus, taking them all in all as they come to the physician, are ever permanently cured. They do not always come to the physician as early as they should, and when they do he is slow in finding out what is the matter. These patients should receive a most searching examination to determine the diagnosis and the reasons for the hemorrhage, and we should not presume it is a pelvic condition of something else.

DR. EDWARD SPEIDEL, Louisville: It is astonishing how often a hemorrhage from mucous polypi is either not diagnosed or is mistaken as a hemorrhage from cancer. Differentiation is very simple. Vaginal examination and the fact that the tumor presenting has a pedicle leading into the cervix will enable one to make the diagnosis.

DR. LOUIS FRANK, Louisville: We frequently make an error in looking on all cases of cancer of the uterus as cancer of the cervix. We should not forget the fact that we may have cancer of the body of the uterus in which there is no ulceration, no external manifestation which can be noted by visual examination or which may be felt by digital examination. So in these cases removal of a portion of tissue from the cervix deserves commendation. In the other type of cases the removal of a section of the cervix gives no index of what is going on. The disease is inside the cavity of the uterus. If a section is removed the microscopist should know where it comes from. The tissue should be removed in long sections so that he can examine them in this laboratory, otherwise he may make an error. In cutting sections through the glands obliquely, one will get at the bottom of some of the glands; the cells penetrate into the muscularis, and it is impossible for an expert microscopist to make an absolute diagnosis at all times. In connection with carcinoma of the cervix we must insist on women having examinations if hemorrhages recur, or if the amount of hemmorrhage exceeds the normal hemorrhages during the climacteric.

DR. A. D. WILLMOTH, Louisville: In connection with this subject I want to discourage the early and indiscriminate use of the curet. It has done more harm than any instrument ever invented.

Ectopic Gestation; Diagnosis and Treatment

DR. N. C. WITT, Franklin: Ectopic gestation is operative at any stage on the discovery of the condition; complete removal of the tube and the abnormal pregnancy by the abdominal route. Even when the patient is apparently exsanguinated, we may be enabled to tie off the bleeding points and by the intravenous injection of normal saline save a life. Or if the hemorrhage has stopped and the patient has reacted, we have no assurance that there will not be a secondary and fatal hemorrhage. Finally, if the initial clot held, its liability toward becoming infected would serve as a menace to the woman.

DISCUSSION

DR. D. C. DONAN, JR., Morganfield: I was called in consultation to see a woman who was taken suddenly ill with the classical symptoms of internal hemorrhage. She was in severe shock. We controlled the hemorrhage by giving saline infusion before making a diagnosis, and when the patient rallied we made a vaginal examination and diagnosed the case as a ruptured ectopic pregnancy. The patient refused operation. We kept her in bed for about ten days. She had a slight relapse, complained of great pain and nausea, and concluded she would go to the hospital. We made all arrangements, but the day before we were to take the patient to the hospital she had a severe hemorrhage and died within an hour. Necropsy revealed a fetus and a gallon of blood in the peritoneal cavity.

Puerperal Eclampsia; Cause and Treatment

DR. EDWARD SPEIDEL, Louisville: I advocate surgical measures. No true progress will be made unless such surgical measures are thoroughly established. I can see no justification for cesarean section in eclampsia. If the attacks occur in the seventh or eighth month of pregnancy, then the convulsions can readily be controlled by narcotics, according to the method of Stroganoff. There is no indication for and nothing is to be gained by a hurried operative delivery. At full term a competent obstetrician will always be able to deliver the eclamptic woman through the vaginal route under normal conditions. If the condition is complicated by a contracted pelvis or obstructing tumor, then operative delivery is performed on account of these complications and not on account of the eclampsia. In cases of this kind the surgeon without obstetric experience should at least consult with an experienced obstetrician before subjecting a woman to such a formidable operation.

DISCUSSION

DR. VIRGIL E. SIMPSON, Louisville: While I have been much interested in the advent of Abderhalden's methods of biologic tests as applied to the diagnosis of pregnancy, I feel greater concern in the therapeutic possibilities, through its application in the toxemias, and particularly that of eclampsia. In fact, as Schwartz has well said, "The diagnosis of pregnancy is only a trifling part of this work."

Abderhalden's theory is that free chorionic villi of implanted ovum induce in the maternal organism a reaction which produces digesting ferments for placental tissue.

It is not irrational to conclude that in eclampsia the formation of protective ferments is deficient, and hence intravascular digestion of placental protein is sufficiently imperfect to permit the accumulation of this blood-formed material, resulting in the symptom complex termed eclampsia.

These interesting findings suggest the possibility, in the near future, of a therapeusis with a serum from patients having large quantities of "protective ferments" or from animals so treated as to immobilize these ferments.

Vaccine Therapy

DR. R. HAYES DAVIS, Louisville: Vaccines are often a useful adjunct to other treatment and will not infrequently cure a condition where other means have failed. They have a distinctly limited field and should be used only when an accurate diagnosis can be made and where they are directly indicated. Autogenous vaccines are usually preferable and should be used in most infections where possible. Vaccines should be used only by men who understand thoroughly the laws of immunity and know the dangers of improper vaccine treatment, and in acute conditions too great care cannot possibly be exercised.

Traumatic Displacement of the Kidney

DR. J. H. PEAK, Louisville: I have found by experience that the best incision is the one advocated by the Mayos. You will encounter the ileohypogastric nerve, which may sometimes be double. This nerve should not be cut because it supplies the skin over the side of the abdomen and crest of the ilium with sensation, and if injured, it will cause much pain, and if severed, the patient will complain of a peculiar numbness, sometimes for many months. The surgeon should be careful not to include this nerve in his suturing, because such an accident will cause the patient intense suffering for two or three days.

One of the most important points in the postoperative treatment is to avoid the use of opiates, as far as possible, as they produce nausea and vomiting. The bowels should be kept regular by enemata in order to avoid constipation. Enemata are much better and safer than purgatives, which often cause nausea and vomiting. The patient should be kept in a recumbent position for twenty-one days following the operation and should be cautioned against violent exercise or jarring during the period of convalescence.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Diagnosis, New York

July, VI, No. 3, pp. 201-308

1 Abdominal Points of Pain and Tenderness. P. Descomps and P. Brousse, Paris.
2 Cardiac Irregularities. E. L. Tuohy, Duluth, Minn.
3 Some Laboratory Features of Painful Oxaluria. B. G. R. Williams and E. M. Williams, Paris, Ill.
4 Prognosis of Eclampsia. A. Shulman, New York.
5 *New Form of Apparatus for Freezing-Point Determinations. E. H. Bartley, Brooklyn.

5. **Freezing-Point Determinations.**—The apparatus devised by Bartley consists of a Dewar tube A, 22 cm. high and 6 cm. inside diameter, set in a wooden base. This is fitted with a rubber stopper having three holes. Into the large hole is fitted a heavy glass test-tube 20 cm. long and 3 cm. wide passing down to near the bottom of the vessel. Two other holes are for two small brass or copper tubes, one terminating just below the rubber stopper and the other passing to the bottom of the vessel and coiled around two or three times. These coils are perforated with a series of small holes. Inside of the test-tube passing through the rubber stopper is a second test-tube of about the same length and 2.5 cm. in diameter, held in place by a section of rubber tubing drawn over it and separating the two tubes by a narrow space. In operation, this space is filled with alcohol. A delicate thermometer with a platinum wire coiled loosely around its lower end completes the apparatus. In the apparatus used by the author, the stirrer is operated by a toy motor run by an ordinary dry cell. This can be dispensed with, if desired, and the stirrer operated by hand, although this mechanical contrivance makes the apparatus almost automatic.

To use the apparatus, fill the vessel about one-third full of ether or carbon disulphid. Insert the rubber stopper tightly, connect the shorter metal tube with a Richards aspirator pump, attached to the water service. The liquid to be frozen is placed in the inner test-tube. There should be enough liquid to cover the mercury bulb of the thermometer, when the latter is lowered to the bottom of the tube. The water is then started through the Richards aspirator pump, which draws air through the ether in a series of bubbles, causing it to evaporate. Owing to the well-known principle of the Dewar tube, applied in the popular thermos bottle, almost all the heat used to vaporize the ether is derived from the thin layer of alcohol between the two test-tubes and from the liquid under examination. There is no frosting of the outer vessel, the whole system remains clear and transparent and the thermometer can easily be read at all times. When the temperature reaches zero, the stirrer is started.

It will be observed that the temperature steadily sinks from —2 to —3 C. before freezing begins, that is, two or more degrees below the true freezing-point of the liquid. Then, suddenly, freezing occurs and the temperature-reading rises to a fixed point and remains there for some minutes. When this point is reached the water is shut off and an accurate reading taken. This is the freezing-point of the liquid. There is no necessity of adding ice to start the freezing as is usually done in other forms of apparatus. The whole process is automatic and all the observer need do is to regulate the flow of water running through the pump and read the thermometer. It is advisable, when the temperature reaches zero, to draw the air through the ether more slowly until freezing takes place, by partly shutting off the flow of water. The thermometer should be accurate and should easily indicate 0.5 degree. For accurate work the Beckmann adjustable thermometer should be used. The thermometer is the most important and most expensive part of the apparatus. The rest of the apparatus is cheap and can be put together from glassware kept in stock by any of the larger dealers in chemical apparatus. The amount of ether required for a determination is not over 25 c.c., and costs but a few cents.

Archives of Pediatrics, New York

August, XXX, No. 8, pp. 561-640

6 *Some Fallacies Regarding Treatment of Tuberculous Adenitis. J. H. Jopson, Philadelphia.
7 Comparative Value of Various Sugars in Feeding of Infants. C. C. Haskell, New York.
8 Blood-Pressure in Infants, Especially in Gastro-Enteritis. H. K. Hill, Philadelphia.
9 Case of Pyloric Stenosis Under Medical Care. C. H. Lefcoe, Philadelphia.
10 *Case of Hydrocephalus. J. Speese, Philadelphia.
11 Normal and Adventitious Danger Periods for Pulmonary Disease in Children. W. C. Williams, Rutherford, N. J.
12 Nerves and Nursing Mother. C. A. Frost, Utica, N. Y.

6. **Tuberculous Adenitis.**—Speaking of tuberculin, Jopson says that this is a form of therapy which will in time largely supplant surgery in the treatment of tuberculous lesions. It is a valuable adjuvant to surgical treatment in other tuberculous conditions. It may prove useful in preventing recurrence in cases in which repeated operations have been performed, and sometimes results in apparent arrest, improvement or cure when operations have been impossible or ineffectual.

10. **Case of Hydrocephalus.**—This case is reported by Speese because of the extensive degree of hydrocephalus present. The measurements of the head were as follows: circumference, 60 cm.; from the anterior fontanel to the posterior part of the posterior fontanel, 35 cm.; from one parietal eminence to the opposite, 31 cm.; from the top of one ear to the other, 35 cm. The lower extremities were completely paralyzed and the reflexes were absent, but wasting of the muscles was not noted. The general condition of nutrition was excellent, and the child took nourishment without trouble. The Wassermann reaction was negative. The case belonged to the congenital type, the cause of obstruction being obscure.

Boston Medical and Surgical Journal

August 28, CLXIX, No. 9, pp. 297-336

13 Immigration and Prevention of Insanity. T. W. Salmon, New York.
14 *Cooked Green Vegetables in Treatment of Acute and Chronic Diarrheas. C. Wilson, Birmingham, Ala.
15 Geographical Distribution of Mental Disease in Massachusetts, 1901-1910; Insanity Rates of Smaller Cities. E. E. Southard, Boston.
16 Removal of Adenoids and Tonsils in Children. A. Coolidge and F. E. Garland, Boston.
17 Congenital Hypertrophic Stenosis of Pylorus. C. G. Mixter, Boston.

September 4, No. 10, pp. 337-372

18 Mode of Transmission of Poliomyelitis. M. J. Rosenau, Brookline, Mass.
19 Neurology of Child: Nervous and Mental Sequelae of Encephalitis in Children. W. P. Lucas and E. E. Southard, Boston.
20 *Cesarean Section; Its Indications; Twenty Cases. F. L. Good, Boston.
21 Treatment of Diabetes Mellitus. E. P. Joslin, Boston.
22 Complement-Fixation Test in Diagnosis. J. H. Wright, Boston.

14. **Treatment of Acute and Chronic Diarrheas.**—Wilson has been treating all chronic diarrheas, and the acute diarrheas and dysenteries that resisted the ordinary treatment, with opium, bowel irrigation, etc., with a diet of spinach, turnip greens and mustard tops with the most gratifying results. It has been his custom to begin by giving a tablespoonful or more of spinach, turnip greens or mustard four times a day, continuing from one to two weeks; no other food being allowed unless patients become very anxious for it, when a little dry toast or common corn bread is given. The first few stools after beginning the diet will show the undigested food, but immediately following this the movements become normal in consistency, and usually after the second day an enema will be required to move the bowels. When there has been distention of the bowels, the flatulence disappears, and when there is tenesmus the relief is most remarkable. Wilson's first experience with this diet was confined to chronic conditions, but later he found that the same good could be accomplished in the acute dysenteries of early spring which failed to respond to the ordinary dose of salts or oil with a little opium in some form. In these acute conditions he has rarely found it necessary to give a dose of opium after beginning treatment. Spinach is prepared in the usual way, insisting on a little more thorough cooking. Turnip greens and mus-

tard, a diet largely used in the rural districts of the South, have given the best results, but when these cannot be had, spinach answers well and is better borne by delicate stomachs. Wilson usually insists on patients continuing the use of the diet with lunch and dinner for some weeks after getting on regular diet. In two patients suffering with pellagra, the diarrhea has been entirely relieved by this diet, but others have not seemed to be benefited by it. Amebic dysentery is improved, but the cure is rarely permanent.

California State Journal of Medicine, San Francisco

August, XI, No. 8, pp. 297-340

23 *Gall-Tract Disease—Some Clinical Features Frequently Overlooked in Diagnosis. C. M. Cooper, San Francisco.
24 Surgical Treatment of Gall-Bladder Disease. W. I. Terry, San Francisco.
25 Cholelithiasis with Short Review of One Hundred Necropsies. W. Ophüls, San Francisco.
26 Work of Pasteur Division of State Hygienic Laboratory. J. C. Geiger, Berkeley.
27 Tuberculin. J. C. King, Banning.
28 *Intravenous Administration of Diphtheria Antitoxin. R. B. Mixsell, Pasadena.
29 Bacteriology of Urine in Relation to Movable Kidney. D. Hadden, Oakland.
30 Carbohydrate Cures in Diabetes. E. Schmoll, San Francisco.
31 Effect of Momentary Contact with 18,000-Volt Current. P. K. Brown, San Francisco.
32 Symptomatology of Gall-Bladder Disease. H. C. Moffitt, San Francisco.

23. **Gall-Tract Disease.**—The normal gall-bladder, Cooper says, can be completely emptied by comparatively light pressure during exploratory laparotomy. If it cannot it should be assumed that there is some hindrance to the outflow. If one ligatures the common bile-duct in the dog, one can still completely empty the gall-bladder by comparatively light pressure, the bile filling up the hepatic ducts. It seems not improbable that the same might be possible in man with an acutely developing common-duct block. Whether or not with a block of some duration this would be likely to occur is another question, but it would seem wise for the surgeon in his gall-bladder work to see the course the bile takes when he squeezes the gall vesicle. Cooper emphasizes the words "light pressure," since with a block at Vater's papilla it is possible that bile could be forced into the pancreatic ducts. The outside of an organ is no real clue as to what is within.

In the case of gall-bladder infection simulating malignant endocarditis that Cooper saw, the gall-bladder was not enlarged, and its outside seemed healthy to the surgeon; yet a drop of bile drawn off through a hypodermic syringe and examined microscopically was seen to teem with organisms, and the drainage of this healthy-looking gall-bladder cured the patient. In the angle between the body and neck of the gall-bladder is a lymph-node which when indurated feels not unlike a calculus. In cholycystitis the lymph-nodes up and down the common duct are found to be enlarged. Lymph-node enlargement then must not in doubtful cases be interpreted to mean a malignant condition.

28. **Intravenous Administration of Diphtheria Antitoxin.**—Mixsell asserts that the intravenous administration of antitoxin in young children, although not always easy, is perfectly safe when done with skill and care. The operation does not, as a rule, commend itself to private practice and ordinarily should be performed only under the best of conditions. There appears from a study of 158 cases to be so little clinical difference in the results obtained from the intravenous and subcutaneous exhibition of antitoxin that we are not warranted in asserting that one method is more efficacious than the other. Except in severe septic cases, therefore, and cases seen late in the disease, the subcutaneous method is to be preferred. Antitoxin given subcutaneously should be given in large initial doses.

Georgia Medical Association Journal, Augusta

August, III, No. 4, pp. 109-144

33 Plea for Psychopathic Wards and Hospitals. Y. H. Yarbrough, Milledgeville.
34 Sterilization of Confirmed Criminals, Idiots, Rapists, Feeble-Minded and Other Defectives. W. L. Champions, Atlanta.
35 Lawyer and His Pauper Client; Doctor and His Charity Patient. J. G. Dean, Dawson.
36 Value of Tuberculin Test in Dairy Herds Supplying Milk to City. C. A. Smith, Atlanta.
37 *Results of Pasteur Treatment in Hydrophobia. C. B. Green, Atlanta.
38 Infant Mortality. N. M. Moore, Augusta.
39 Outlook for Pediatrics in Southern States. C. A. Rhodes, Atlanta.
40 Medical School Inspection. H. J. Baker, Augusta.
41 Hemoglobinuria Fever. L. B. Royal, Girard.

37. Abstracted in THE JOURNAL, May 31, 1913, p. 1733.

Journal of Abnormal Psychology, Boston

August, VIII, No. 3, pp. 137-216

42 Relation of Erotic Dreams to Vesical Dreams. H. Ellis, London.
43 Psychanalytic Study of Severe Cases of Hysteria. L. E. Emerson, Boston.

Journal of Experimental Medicine, New York

September, XVIII, No. 3, pp. 219-316

44 Identity of Precipitins and Protein Sensitizers (Albuminolysins). H. Zinsser, San Francisco.
45 *Total Non-Protein Nitrogen of Blood in Nephritis and Allied Conditions. C. B. Farr and J. H. Austin, Philadelphia.
46 *Study of Cerebrospinal Fluid in Acute Poliomyelitis. F. R. Fraser, New York.
47 Cultivation of Amebas in Pure Culture on Autolyzed Tissues. M. Couret and J. Walker, New Orleans.
48 *Excretion of Glycuronic Acid in Pneumococcus Infections. F. Medigreceanu, New York.
49 *Histogenesis of Blood-Platelets. W. H. Brown, Chapel Hill, N. C.
50 *Mechanism of Growth of Connective Tissue. A. Carrel, New York.
51 *Influence of Temperature on Action of Strychnin in Frogs. T. S. Githens, New York.
52 *Elimination Through Mucosa of Urinary Bladder. I. S. Kleiner, New York.
53 Cultivation of Parasite of Rabies. H. Noguchi, New York.

45. **Non-Protein Nitrogen of Blood in Nephritis.**—In a series of non-nephritic individuals the total non-protein nitrogen of the blood, determined by Folin's method, was found by Farr and Austin to lie between 15 and 43 mg. per hundred c.c. From 50 to 60 per cent. of this was in the ammonia-urea fraction. In cardiovascular disease with renal congestion, but without other renal lesion, there was no evidence of increase of non-protein nitrogen in the blood, or of alteration of the ammonia-urea percentage. In chronic nephritis with marked albuminuria and edema there was very little, if any, increase or alteration. In chronic nephritis with hypertension the non-protein nitrogen was definitely increased, ranging from 40 to 180 mg. per hundred c.c. of blood. The percentage of the ammonia-urea fraction was usually higher than in non-nephritic cases. Cases showing high non-protein nitrogen values were subject to rapid fluctuations in these values in the course of a few days. As a rule, clinical improvement was associated with a fall of the non-protein nitrogen figures to nearer the normal range. Uremia was almost always accompanied by an increase of non-protein nitrogen in the blood, but no constant relation could be established between the degree of increase and the tendency to uremia. The authors' cases have not yet been followed for a long enough period to admit of conclusions as to the possible relation between the degree of non-protein nitrogen retention and ultimate prognosis. They believe this method to be a valuable aid in the clinical study of nephritis and that it can readily be carried out in any well equipped clinical laboratory.

46. **Cerebrospinal Fluid in Acute Poliomyelitis.**—The spinal fluid in the 126 cases of acute epidemic poliomyelitis examined by Fraser was usually clear and colorless and did not appear to be under any great amount of pressure. It showed changes in the number of cells present, or in the globulin content, or in both, in the majority of patients examined on the first few days after onset of symptoms. The number of cells was usually highest during the first week, and in one case reached the figure of 1,221 per cubic millimeter. The globulin reaction was usually most marked during the third week. The number of cells diminished rapidly and was above normal in only 32 per cent. of the cases in the third week. The increase in the globulin reaction persisted to the fourth week and might be present for a considerably longer period. The cell increase was due almost invariably to mononuclear

cells of various types. The lymphocytic type of cell was the most common. A high polymorphonuclear count was noted in the very early stages. All the fluids reduced Fehling's solution. The examination of the spinal fluid may be of value in diagnosis in the preparalytic stages and in abortive cases.

48. **Excretion of Glycuronic Acid in Pneumococcus Infections.**—It has been found by Medigreceanu that the amount of glycuronic acid excreted in the urine, estimated by Tollens' furfurol distillation method, is increased during the febrile period of almost all cases of lobar pneumonia in man. Patients weighing from 57 to 70 kg. excrete during the febrile period from 0.8 to 1.3 gm. of glycuronic acid in twenty-four hours, while the output of a normal individual of the same weight, age and under similar conditions would not exceed from 0.4 to 0.6 gm. This increased output is not dependent on outside factors; it is attributable to pathologic changes of the organism itself during the disease. Similar observations have been made in postpneumonic empyema and bronchopneumonia. Fasting rabbits, with general pneumococcus infection, have also shown a marked increase in the output of glycuronic acid during the pathologic process. Whether the conjugated substances with the glycuronic acid in the cases studied have the same origin and are qualitatively the same as under normal conditions, or whether we are dealing with different compounds, has not yet been determined.

49. **Histogenesis of Blood-Platelets.**—Brown believes that under normal circumstances blood-platelets are largely derived from the megakaryocyte of the blood-forming organs. The transitional leukocyte, representing a persistent form of the embryonic premegakaryocyte, is a circulating homologue of the megakaryocyte and probably plays some part in normal platelet formation. Under conditions of excessive demand for platelet production there may be a greater or less reversion to an embryonic mode of platelet formation in which less highly specialized cells than the megakaryocyte participate in platelet production. In addition to the megakaryocyte, the cells that have been observed to take part in platelet formation are hyperplastic endothelial cells in the marrow, and mononuclear and transitional cells (premegakaryocytes) in the marrow, spleen and blood.

50. **Mechanism of Growth of Connective Tissue.**—When connective-tissue cells have been cultivated for a certain length of time in a medium which has been repeatedly changed, Carrel says that a definite relation arises between the rate of growth of the cells and the composition of the medium. It is possible, by adding to the culture-medium a given quantity of certain substances such as embryonic juices, to foresee the extent to which a fragment of tissue composed of a given strain of cells will increase in a given time. The rate of growth of a strain of cells can be accelerated or retarded by the addition to the medium of activating or retarding substances. The dynamic condition of a strain of connective-tissue cells which have been living in a given medium for some time is not a definitely acquired characteristic, but a temporary state, and is the product or function of the medium in which the cells are living, and is readily modified merely by altering the composition of the medium. A knowledge of the characteristics of the growth of connective tissue described has led to a new result—the indefinite proliferation of a strain of connective-tissue cells outside of the organism. The strain of connective tissue originally obtained from a fragment of chick embryo heart, which had been pulsating *in vitro* for 104 days, was still actively alive after sixteen months of independent life, and more than 190 passages. The rate of proliferation of the connective tissue sixteen months old equaled and even exceeded that of fresh connective tissue taken from an 8-day-old embryo. It appears, therefore, that time has no effect on the tissues isolated from the organism and preserved by means of the technic described. During the sixteenth month of life *in vitro* the cells increased rapidly in number and were able in a short time to produce a large quantity of new tissue. This fact, therefore, definitely demonstrates that the tissues were not in a state of survival, as was the case in certain earlier experiments, but in a condition of real life, since the cells of which they were composed, multiplied indefinitely in the culture-medium.

51. **Action of Strychnin in Frogs.**—The main results of this investigation are summarized as follows by Githens: Doses of strychnin amounting to 0.0006 mg. per gram of frog will cause tetanus at all temperatures between 5 and 30 C. (between 41 and 86 F.), although at low temperatures the tetanus may appear late. A dose of 0.0003 mg. per gram of frog will frequently produce tetanus at 5 C. as well as at 30 or 27 C. (80.6 F.), but may nevertheless fail to produce any reaction at such an intermediary temperature as 21 C. (69.8 F.). Smaller doses, 0.0002 mg. per gram, will cause tetanus in the cold but not at high temperatures.

52. **Elimination through Mucosa of Urinary Bladder.**—Kleiner asserts that the bladder is practically impermeable for diffusible substances present in the blood in great excess even in the absence of the kidneys, the chief organs of elimination of the body.

53. **Cultivation of Parasite of Rabies.**—About fifty series of cultivations were made by Noguchi with the brain or medulla removed aseptically from rabbits, guinea-pigs and dogs infected with "street" virus, "passage" virus or "fixed" virus. Usually the animals were etherized just before spontaneous death occurred. The method that has yielded the result to be reported is similar to that employed successfully for the cultivation of the spirochetes of relapsing fever. In the cultures very minute granular and somewhat coarser pleomorphic chromatoid bodies arise which on subsequent transplantation reappear in the new cultures through many generations. The same bodies, so far as appearances are concerned, are obtained from "street," "passage," and "fixed" virus. The smallest of these bodies are just on the limit of visibility with the Zeiss apochromatic 2 mm. lens.

On four different occasions Noguchi observed in the cultures from "passage" and "fixed" virus nucleated round or oval bodies surrounded with membranes totally different from the minuter granular bodies, although arising in the cultures in which the latter occurred. Their appearance was sudden and their duration four or five days, when they diminished coincidently with an increase in granular bodies. In one of the four instances the larger bodies appeared in a culture prepared from the brain of a rabbit previously inoculated with a culture of "passage" virus which had given rise to the symptoms of rabies. In two of the instances the larger nucleated bodies arose in cultures prepared from "fixed" virus in which Negri bodies were difficult to demonstrate either in sections or in films. The cultivated nucleated bodies are actively multiplying, by division or budding, and exhibit the appearance not of bacteria but of protozoa. In size they range from about 1 to 12 microns. Under the dark-field microscope, as in the stained preparation, they show definite characters. The center is nuclear and the membrane is distinct and highly refractive. The united individuals in a multiplying mass may be enclosed for a time in a common capsule (?). By inoculating cultures containing the granular, pleomorphic or nucleated bodies, rabies has been reproduced in dogs, rabbits and guinea-pigs, as shown by the typical symptoms and positive animal inoculations; while the film preparations from the brain of the animals contained always the granular and sometimes the nucleated bodies in large numbers.

Journal of Nervous and Mental Disease, Lancaster, Pa.

August, XL, No. 8, pp. 489-550

54 *Analysis of Cerebrospinal Fluid in One Hundred and Nine Cases of Disease of Nervous System Not Including Acute Meningeal Affections. W. F. Schaller, San Francisco.
55 Piblokto or Hysteria Among Peary's Eskimos. A. A. Brill, New York.
56 *Trigeminal Dural Neuralgia. B. R. Tucker, Richmond, Va.

54. **Analysis of Cerebrospinal Fluid.**—Schaller attaches great importance to the information derived from the analysis of the cerebrospinal fluid in all cases of nervous disease in which the diagnosis appears in doubt. In his series it was exceptional that the clinical findings were at variance with the laboratory findings. This occurred in two cases of paresis, in

a case of pes planus and in one case of progressive muscular spinal atrophy. In regard to the pressure of the fluid, the globulin and cell content, his experience does not differ materially from the experience of the Hamburg school. He believes, however, that even in cases of chronic meningeal inflammation, of which the syphilitic process is a type, the estimation of the total protein is of value. Six cells per cubic millimeter appears the upper limit of normal. The Wassermann reaction in the fluid is highly characteristic of a process of syphilitic origin and, generally speaking, is of greater significance than the blood Wassermann when it is desired to establish the nature of a given nervous disorder.

Schaller agrees with Hauptmann that the positive Wassermann reaction in the larger amounts of fluid is also very characteristic of nervous syphilis. He has no case in which the clinical evidence was against the assumption of a syphilitic affection in which the fluid was negative in the smaller amounts and positive in the larger amounts. In his series of tabes cases he found the Wassermann reaction to be more frequently positive in the fluid than in the blood. This is opposed to the later view of Nonne but is in accord with the opinion of most observers. In cerebrospinal syphilis the reaction occurred more often in the blood than in the fluid. This is in accord with the original experiences of Nonne who thus sought to establish a differential point between the true syphilitic and the parasyphilitic affections, which opinion he has later modified from his experience in tabes.

56. **Trigeminal Dural Neuralgia.**—Tucker has observed in the last five years a type or variety of head pain, neuralgic in character, yielding but slightly to the usual analgesics, having more or less distinct manifestations and due, in his opinion, to neuralgia in the dural branches of the fifth nerve, just as tic douloureux, with which it is at times associated, is due to neuralgia in its peripheral branches. For this condition he has selected the name of trigeminal dural neuralgia. The cause of trigeminal dural neuralgia seems to be the same as in trifacial neuralgia, which is usually constitutional. These causes are most frequently malaria, rheumatism, diabetes, anemia, syphilis, arteriosclerosis and sometimes other general disturbances. The nature of trigeminal dural neuralgia is that it occurs in attacks of sharp, intense pain of irregular periodicity; that nausea, vomiting, flashes of light and familial tendency are not prominent features; that the pain, as a rule, is unilateral and may radiate to the face, neck or shoulders; that the pain does not yield to the usual headache remedies; that vasomotor and trophic disturbances are common; that this head pain cannot be traced to the usual causes of headache producing changes in cerebral circulation, but that it appears to be due to chronic systemic diseases like chronic rheumatism, chronic malaria or arteriosclerosis, and that remedial medication directed toward the conditions just named usually cures the dural neuralgia.

Tucker reports nine cases. Most of these patients are in middle life, a hereditary factor is practically absent, the pain is sharp and intense, the supposed cause is a chronic constitutional condition, exciting causes are variable, and radiating pains, tic douloureux and vasomotor disturbance are of common concomitance. These headaches have extended over periods of from eight months to twenty years; in frequency they vary from a few days to a few weeks and are of irregular periodicity; the attacks themselves last from a few hours to several days; the pain is usually unilateral, previous treatment has at best had only temporary effect and these cases yielded to specific medication directed to the underlying cause.

Laryngoscope, St. Louis

August, XXIII, No. 8, pp. 801-880

57 Recent Views Regarding Otosclerosis. T. Harris, New York.
58 Technic of Labyrinth Operation. E. B. Dench, New York.
59 Diagnosis of Rupture into Lateral Ventricle and of Acute Internal Meningitis. E. Ruttin, Vienna.
60 Vertigo. P. Friedrich, Kiel, Germany.
61 Tumors of Septum. R. H. Johnston, Baltimore.
62 Case of Phlegmon Starting as Peritonsillar Abscess and Extending Downward as Far as Second Ring of Trachea. G. L. Richards, Fall River, Mass.
63 Simplified Technic for Removal of Faucial Tonsils. L. F. Long, Zanesville, Ohio
64 Chronic Stenosis of Larynx and Trachea: Report of Case. C. A. Leavy, St. Louis.
65 Results in Twenty Cases of Laryngeal Diphtheria Requiring Tracheotomy. C. E. Purcell, Paducah, Ky.
66 Goiter from Standpoint of Specialist. M. B. Tinker, Ithaca, N. Y.
67 Improved Audiometer. H. Hays, New York.
68 Endoscopic Syringe. C. Jackson, Pittsburgh.

Medical Record, New York

August 30, LXXXIV, No. 9, pp. 369-414

69 *Further Experiences with Duodenal Ulcer. M. Einhorn, New York.
70 Pathology of Simple and Exophthalmic Goiter. L. B. Wilson, Rochester, Minn.
71 *Results of Intravenous Injections of Extracts of Goiter on Blood-Pressure in Dog. J. M. Blackford and A. H. Sanford, Rochester, Minn.
72 *Variations of Urea Content of Blood, with Practical Method for Its Determination. G. W. McCaskey, Ft. Wayne, Ind.
73 Clinical Interpretation of Chronic Abdominal Enlargement in Children, with Special Reference to New Differential Sign between Rachitis and Tuberculous Peritonitis. H. B. Sheffield, New York.
74 Roentgenotherapy of Eczema. M. K. Fisher, Philadelphia.
75 Congenital Stenosis of Pylorus. A. Strauch, Chicago.
76 Case of Saccharomycetic Infection of Lungs. W. Wovschin, New York.

69. **Duodenal Ulcer.**—The indications for surgical intervention in duodenal ulcer in Einhorn's opinion are as follows: 1. Perforation requires immediate operation. 2. Recurrent profuse hemorrhages (hematemesis or melena or both) endangering the life of the patient require a prophylactic interval operation. 3. Frequent small hemorrhages, not being influenced by rational treatment, leading to an appreciable degree of constant anemia, demand operative intervention. 4. Patients with constant continuous hypersecretion, accompanied by intercurrent ischochymia, not yielding to treatment, should likewise be operated on. 5. Severe pains, not influenced to a considerable extent by a repeated course of rational medical treatment, form a strong indication for operative measures.

71. **Results of Intravenous Injections of Extracts of Goiter on Blood-Pressure in Dog.**—The authors found that a powerful depressor substance exists in exophthalmic goiters and that a primary injection establishes tolerance to the action of further injection. Atropin does not inhibit its action. The substance does not behave physiologically like cholin. The action is chiefly through peripheral dilatation aided by some diminution in cardiac output. Irritability of the vagus is not decreased. The existence of a crossed tolerance between the depressor action of extracts of exophthalmic goiters and of serum from patients with exophthalmic goiter suggests that the two substances are the same.

72. **Variations of Urea Content of Blood.**—McCaskey isolates the urea by a modification of the method described by Herter. As finally worked out the technic is as follows: Five c.c. of blood are taken from an elbow vein by a syringe and poured directly into 60 c.c. of absolute alcohol contained in a suitable flask at the bedside. This is allowed to stand twenty-four hours, when it is filtered and the precipitate washed with hot distilled water. This is evaporated to dryness at moderate temperature, after which the residue, which with proper technic contains practically all of the urea, is redissolved in 5 c.c. of distilled water. The urea is then determined with a modified Hüffner apparatus by the hypobromite method. The ordinary gas-collecting tube or eudiometer for urine, which measures about 13 mm. in diameter, is much too large to measure the gas from the minute quantities of urea found in the blood, so that McCaskey had a special tube made about 4 mm. inside diameter and graduated in 0.01 c.c. One c.c. of gas forms a column about 10 cm. long, representing 0.056 (1/18 per cent.) of urea. This is about the high normal limit, but 0.01 c.c. of gas can be measured and this would be equal to about 0.00056 per cent. The total length of the tube is such that percentages up to 0.5 could be determined, and such relatively large quantities of urea in the blood are very rare.

New Mexico Medical Journal, Las Cruces

August, X, No. 5, pp. 113-132

77 Amebic Dysentery. E. C. Prentiss, El Paso, Tex.
78 Paranoia. C. M. Yater, Roswell.

New York Medical Journal

August 30, XCVIII, No. 9, pp. 401-448

79 Analysis of Five Hundred Fatal Medical Cases in Tropics. W. E. Deeks and W. G. Baetz, Canal Zone.
80 Nervous Conditions and Their Relations to Pelvic Diseases. J. H. Carstens, Detroit, Mich.
81 Myopia Prevention by Teachers. W. H. Bates, New York.
82 Study of Stillbirths. L. W. Thomas, New York.
83 Report of Imbecile with Paralysis. J. A. Jackson, Philadelphia.
84 Present Status of Serotherapy. W. B. Jennings, New York.
85 Management of Pulmonary Tuberculosis. L. Shalet, New York.
86 Modified Drainage for Suprapubic Prostatectomy. G. H. Day, Louisville.
87 Case of Artificial Pneumothorax in Treatment of Pleurisy with Effusion. R. M. Alexander, Wernersville, Pa.
88 Case of Measles Complicating Pregnancy. S. J. Scadron, New York.

September 6, No. 10, pp. 449-500

89 Orthopedics in General Practice. C. Ogilvy, New York.
90 Vaccine Treatment of Typhoid. B. M. Randolph, Washington, D. C.
91 *Foundation of Education. H. J. Mulford, Buffalo.
92 Analysis of Five Hundred Fatal Medical Cases in Tropics. W. E. Deeks and W. G. Baetz, Canal Zone.
93 Cutis-Index Morbi. W. P. Cunningham, New York.
94 Vincent's Angina. L. Green, New York.
95 Rational Treatment of Pustular Skin Diseases. J. W. Fisher, Middletown, Conn.
96 Double Drainage-Tubes (Inner and Outer) for Nares after Submucous Resection of Septum. S. Goldstein, New York.
97 *Three Cases of Acute Gastro-Intestinal Intoxication with Constipation and Suggested Method of Surgical Treatment. R. J. Manion, Fort William, Ont.

91. **Foundation of Education.**—The manner of learning, says Mulford, should begin early, but—teaching, formal teaching, should not. The brain is not ready for real thought before its eighth year, and so, anything requiring thought should be barred until then. Before that we have the primitive brain to consider, and the primitive brain itself considers only action. There should be no formal schooling for a child under 7 years of age, but the foundation of its education should be begun. That is, we should lay down the right pathways, not forgetting that these pathways come through action. The child under that age should have an active life, but it should be action that is under proper direction. He should not be thrust out into the back yard or on the street to pick up things for himself, mostly undesirable things; his activities should be so directed that he will learn useful things through them. The little child comes into knowledge of the external world through intimate association with it, through contact. That which he learns he learns unconsciously, without effort, and as a matter of fact through constant and everyday association with it. He learns to say "Mamma" through hearing the word many times, day after day. The impulse reaches his brain through the afferent nerve fibers, and, after a sufficient number of these impulses have been received, the motor centers controlling the muscles having to do with speech awake to the consciousness of the word, and, acting on that consciousness, the muscles coordinate and pronounce the word. But, even after the word is pronounced, the centers are not in immediate control of it; their control is not perfect at the first attempt, nor yet at the second. The word impulse is so complicated that it requires many repetitions before it is learned. This, Mulford continues, should be the manner of the acquisition of knowledge by the very young; in that manner should the foundation of an education be laid. Children under 8 years of age should learn, but learning should not be forced on them. The process must be made interesting and understandable from their point of view. Most children, at any age, learn with difficulty under the ordinary school routine, and usually have to be driven to their books. That is because, first, they do not begin in the right way, and, second, because the work is not presented so that they may grasp it. If these children learn anything at all, it is only through sheer memorizing of facts. But it is not the memorizing of bare facts, facts that only are to be repeated parrotlike, that constitutes education. Education is the individual, and, more than the individual; it is the present and the future, the individual and the world. It is the welfare of both that is determined by the foundation of the individual's education, by the development of the child's growing brain.

97. **Gastro-Intestinal Intoxication.**—During the past three years, Manion attended three cases, all fatal, the outstanding features of which were a very acute onset of so severe an intoxication as to cause coma, absolute constipation, vomiting of black material, and death in from one to three days. The constipation was so absolute and the vomiting so intractable as to resemble an obstruction of the bowels, but the antemortem findings in one case, and the post-mortem findings in the other two, revealed no sign of organic obstruction, but only a paralysis of a certain portion of the small intestine, above and below which the bowel was absolutely normal. Despite the fact that the material in the distended, paralyzed portion of bowel could easily be forced in either direction, Nature, even with the assistance of oil, salts, and so forth, was quite unable to overcome the obstruction caused by this paralysis; with the result that the distended portion acted as a reservoir of toxins from which the body absorbed enough poisonous materials to cause ultimately a fatal ending. Taking into account the gravity of this condition, Manion suggests that the treatment should consist of interstitial injections, stimulants, irrigation of bowel and stomach, and strong purgation. But if it were found impossible to satisfactorily evacuate the bowels of the patient, it is the opinion of Manion that a laparotomy would be indicated with the object of forming an artificial anus to drain the distended portion of bowel, which is nothing more or less than a toxic reservoir, absorption from which is gradually killing the patient. The whole operation could be done inside of ten minutes without even the shock of an anesthetic if the patient were unconscious, as he usually is in this condition. And the artificial anus could be attended to after recovery from the acute condition.

New York State Journal of Medicine, New York

August, XIII, No. 8, pp. 407-456

98 Relief of Vesical Obstruction in Selected Cases. H. G. Bugbee, New York.
99 Some Phases of Surgery of Stomach. G. Woolsey, New York.
100 *Medical versus Surgical Treatment of Puerperal Eclampsia. E. G. Zinke, Cincinnati.
101 *Emptying Uterus as Method of Treatment of Puerperal Eclampsia. R. Peterson, Ann Arbor, Mich.
102 Value of Discipline in Care of Sick Child. T. W. Clarke, Utica.
103 Nerves and Nursing Mother. C. A. Frost, Utica.
104 Use and Abuse of Sugar. E. H. Bartley, Brooklyn.
105 Forests and Their Relationship to Eugenics. G. N. Jack, Buffalo.
106 Reflections Concerning Art of Healing. S. Y. Howell, Buffalo.
107 Conservation Treatment of Injuries of Hand. V. D. Bozovsky, Dunkirk.

100. **Treatment of Puerperal Eclampsia.**—Zinke has formulated the following definite plan of treatment for puerperal eclampsia: If the patient has or has had convulsive seizures, 25 drops (15 m. or 1 c.c.) of tincture of veratrum viridi are given hypodermically, and repeated every hour until the pulse is reduced to 60 per minute or less. If within an hour the pulse falls from 150 to 100 per minute only from 10 to 15 drops are injected in the succeeding dose. More than two or three injections are rarely necessary to bring the pulse down to 60. This is the most valuable remedy in the treatment of eclampsia. A copious enema of soap-water serves to wash out the large intestine. The catheter is employed to empty the bladder; the urine is measured and examined. As soon as the patient is able to swallow, a tablespoonful of Epsom salt, or some other saline cathartic, is administered per mouth. Stronger cathartics are given only when the saline proves ineffectual. (By this time, if the patient is not in a hospital, she should, if possible, be taken to one.) Whether the patient is in a hospital or not, immediately after the foregoing treatment has been administered she is given a hot bath or hot pack, preferably the former. Neither the bath nor pack exceeds half an hour in duration. The patient is then rubbed dry and placed in a warm, dry bed. The bath or pack is given not oftener than twice in one day. Ordinarily but one bath or pack is necessary in twenty-four hours.

The only food is milk or broth or both. Water or Fischer's solution may be administered freely. The latter may be

given by rectum, or, if the case be an urgent one, intravenously. Chloral, by mouth or rectum, is given if the patient is very restless. Of late Zinke has discarded the use of chloroform and morphin; ether or gas-ether is the anesthetic of choice if operative measures must be employed. If the patient is at the end of the first stage of labor, and then only if the symptoms are grave, forceps may be employed to terminate labor. If the first stage is not complete, or if labor has not begun and the patient has improved under the treatment before mentioned, the case is then left to Nature until the first stage of labor is completed, when forceps may be applied. In cases of anemia, or asthenia from any cause, the normal saline solution or Fischer's solution is given by rectum or intravenously.

With very little variation this has been Zinke's plan of treatment for the last ten years, during which time thirty cases of eclampsia were observed. Four mothers died, 13.3 per cent. Fifteen of the children, 50 per cent., were lost. It is not asserted by Zinke that this mode of procedure will be invariably successful, but his experience impels him to believe that in those cases in which it fails very little could have been expected from surgical intervention. The good results obtained from strictly medical care in these cases far exceed the results accruing from all the surgical means proposed for the relief from this disease.

101. Also published in *American Journal of Obstetrics and Diseases of Women and Children*, August, 1913, and abstracted in THE JOURNAL, Sept. 13, 1913, p. 895.

Northwest Medicine, Seattle, Wash.

August, V, No. 8, pp. 209-238

108 Problems for Medical Profession. W. C. Cox, Everett, Wash.
109 New Operation for Radical Cure of Indirect Inguinal Hernia. U. C. Bates, Seattle, Wash.
110 Ultimate Nervous Results of Acute Angulation of Sigmoid and Consequent Fecal Stasis. W. H. Axtell, Bellingham, Wash.
111 Diagnosis of Gastric Cancer. A. R. Lensman, Seattle, Wash.
112 Indications for Interruption of Pregnancy. M. A. Freece, Salina, Utah.
113 Treatment of Hemorrhagic Disease of New-Born: Report of Case. J. B. Manning, Seattle, Wash.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

August, XVII, No. 2, pp. 57-108

114 Old Days at Old College. W. H. Taylor, Burlington, Va.
115 Case of Addison's Disease. B. R. Tucker, Burlington, Va.

Pennsylvania Medical Journal, Athens

August, XVI, No. 11, pp. 847-930

116 *Isolated Sclerotic Involvement of Mitral Valve. R. N. Willson, Philadelphia.
117 Correction of Nasal Deformities, Particularly Lateral Deflections and Depressions with Obstructing Deviations of Septum. G. M. Marshall, Philadelphia.
118 Intubation. R. W. Bemis, Philadelphia.
119 Two Cases of Nasopharyngeal Polypus in Young Persons Operated for Adenoids. W. R. Butt, Philadelphia.
120 Gas Bacillus Infection. D. Guthrie, Sayre, N. Y.
121 Bronchoscopic Removal of Collar Button after Twenty-Six Years' Sojourn in Lung. C. Jackson, Pittsburgh.
122 Foreign Bodies in Lungs: Report of Two Cases. H. R. M. Landis, Philadelphia.
123 How Can We Make Society Meetings Interesting? W. G. Tillman, Easton.
124 Unethical Ethics versus Ethical Quackery. J. H. Comroe, York.

116. Abstracted in THE JOURNAL, Nov. 16, 1912, p. 1816.

South Carolina Medical Association Journal, Seneca

August, IX, No. 8, pp. 209-237

125 Conservation of Nerve and Mental Health. J. A. Hodges, Richmond, Va.
126 Personal Hygiene. F. A. Coward, Columbia.
127 Country Sanitation. J. A. Hayne, Columbia.

Vermont Medical Monthly, Burlington

August, XIX, No. 8, pp. 183-208

128 Effect of Strychnin and Digitalis on Man. D. Marvin, Burlington.
129 Alcoholism and Eugenics. W. L. Wasson, Burlington.
130 New Serodiagnostic Test for Pregnancy (Abderhalden's). C. F. Ball, Rutland.
131 Gleanings from Trip of Medical Globe-Trotter. M. R. Crane, Rutland.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

August, X, No. 116, pp. 337-384

1 *Hereditary Congenital Torticollis. D. M. Greig.
2 Two Cases of Atelfosis. F. P. Weber.
3 Two Successful Cases of Operation for Strangulated Inguinal Hernia in Female Infants of Ages of 22 and 17 Days. R. H. A. Whitelocke.
4 Refraction Work in School Children. J. Allan.

1. **Hereditary Congenital Torticollis.**—The family cited by Greig consists of father, mother and four children, two of each sex. The children's maternal grandmother had a left congenital wry-neck. The mother, an only child, aged 35 years, is the subject of a left congenital wry-neck for which no treatment has ever been attempted. The head inclines to the left, the left ear being approximated to the left shoulder and the face looks toward the right shoulder. The sternomastoid muscles are well developed, though the left is more prominent than the right and the trapezii muscles are not abnormal. The degree of torticollis is slight. She can put her head perfectly straight and without effort, but as soon as her attention to the position is relaxed, her head invariably inclines again toward the left. The father is a normally developed man of the artisan class, perhaps slightly undersized, but healthy. The eldest child is a daughter, aged 10 years, strong, well developed and without peculiarity.

The second child is also a daughter, aged 7 years, but she has a left congenital wry-neck, more marked and obvious than her mother's. The wry-neck in this child was not noticed until she was 6 months old. She had had no illnesses previous to that time, and has had no illness of importance since. Even after the deformity had been admitted its extent was not appreciated until quite recently, when, the child having fallen and cut her head, her hair was shorn to facilitate dressing; the deformity naturally became much more noticeable. There is marked contraction and prominence of the left sternomastoid muscle; the left suboccipital area seems very empty while the right seems fuller than normal, and this fulness appears to be due in great part to the cervical spine, which presents a dextroconvex scoliosis. Otherwise the child is of good physical and of normal mental development and is getting on well at school. The third child, a boy, aged 5 years, is strong, well and healthy, and free from defect. The youngest child is 2 years of age. He has a very marked left congenital wry-neck, presenting conditions exactly similar to those of his sister in appearance and in every detail, however trifling.

British Medical Journal, London

August 23, II, No. 2747, pp. 437-528

5 Port Sanitary Administration: Prevention of Introduction of Infectious Disease. H. Williams.
6 Destruction of Rats in Port of Rangoon. F. A. Fox.
7 Prevention of Tuberculosis. E. W. Hope.
8 Functions of Tuberculosis Officer. H. O. West.
9 Necessity of Educating Public in Matters Relating to Public Health. E. W. Hope and H. R. Kenwood.

Clinical Journal, London

July 30, XLII, No. 17, pp. 257-272

10 Arteriosclerosis. W. E. Hume.
11 *Some Interesting Surgical Cases. D. Power.
12 Vasomotor Phenomena as Premonitory Symptom in Rheumatoid Arthritis. J. Lindsay.

August 6, No. 18, pp. 273-288

13 Diagnosis in Abdominal Emergencies. W. Sheen.
14 *Demonstration of Surgical Cases. E. M. Corner.
15 Ionic Medication. E. P. Cumberbatch.
16 Spontaneous Hemorrhages. H. Duckworth.

August 13, No. 19, pp. 289-304

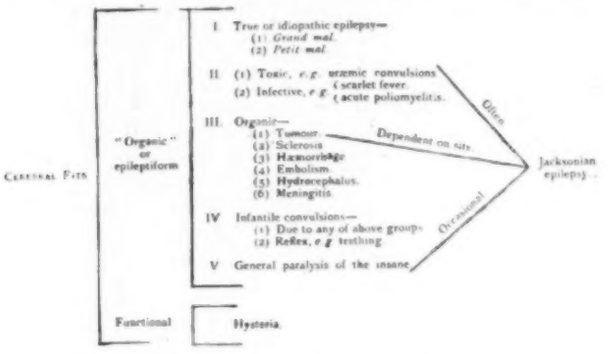
17 Internal Glandular Secretions and Their Influence on Causation and Treatment of Disease. R. M. Leslie.
18 *Three Cases of "Fits." R. A. Fleming.

11. **Surgical Cases.**—Power cites: (1) foreign body in the esophagus; (2) pneumonia simulating abdominal inflammation; (3) acute duodenal perforation simulating pneumonia;

(4) multiple infection of tongue and glands; (5) recurrent spontaneous hemorrhage into the breast (hemophilia?); (6) spontaneous fracture of the thigh secondary to cancer of the uterus.

14. **Surgical Cases.**—Corner cites a case of sarcoma of the femur in a boy 12 years old; a case of granuloma of the jaws; one of tuberculous mediastinal abscess; one of spastic diplegia, Little's disease; deformities after arthrectomy, and two cases of hernia, one with a movable testicle.

18. **Three Cases of "Fits."**—Fleming makes use of the following table in speaking of the pathology of these cases:



Dublin Journal of Medical Science

August, III, No. 500, pp. 81-160

19 Clinical Report of Rotunda Hospital for One Year, Nov. 1, 1911, to Oct. 31, 1912. H. Jellett.
20 *Recognition and Treatment of True Idiopathic Epilepsy in Children. J. N. G. Nolan.
21 *Treatment of Dysentery by Injection of Emetine Hydrochlorid. J. H. Thompson.

20. **Idiopathic Epilepsy in Children.**—The management of the child should be based on general hygienic and dietetic lines. Regulated periods of exercise and instruction must alternate with regular periods of rest and repose in Nolan's judgment. Corporal punishment must be absolutely prohibited. All over-exertion and strain, whether mental or physical, must be assiduously guarded against. The usual stimulating dietary of tea and meat had better be abolished, and milk and cereals substituted. Drug treatment had better be avoided at this stage, save the administration of general tonics and necessary aperients. A carefully-regulated life with a purin-free diet and a small daily dose of bromids is the treatment par excellence. The bromids do not require to be given in great quantities or at intervals during the day. The smallest dose which appears to exert a favorable influence over the fits should be taken as the maximum, and this never should exceed 60 grains. The effect is intensified by the full quantity being given at one time. The best time is at night or before rising, depending on whether the patient is subject to diurnal or nocturnal attacks. Plenty of water should be given with the dose, and sufficient laxative to insure a daily evacuation of the bowels. The best adjuvant is the syrup of Virginian prune.

21. **Treatment of Dysentery.**—Thompson's treatment usually was to start off with ʒvi of castor oil and a few minims of tincture of opium; after that had produced its effect he ordered mxx tincture of opium in ʒss of water, to be followed fifteen minutes later by 30 grains of powdered ipecac, in emulsion. (No food having been taken for some time previously.) This was repeated every four hours. Diet restricted to soup, milk, or albumin water, and the patient rigorously confined to bed. If, after twelve doses there was no improvement Thompson then ordered the saline treatment—

	gm. or c.c.		
℞ Sodii sulphatis	4		ʒi
Acidi sulphurici dil.	66	or	♏ x
Aquae ad	16		ʒ ss

Misce. Sig. Such a dose every two hours.

This was given till blood and mucus had disappeared from the stool.

Later he resorted to emetine hydrochlorid. First he gave small doses, 1/3 grain, but now he never uses less than ½ grain doses for adults, and sometimes when he gets early cases he injects 1 grain, which practically aborts the disease. He has never found any ill effect following an injection. In mixed dysentery infection—i. e., amebic and bacillary—Thompson finds that injections of emetine, and ʒss doses of the acid sodium sulphate mixture by the mouth is the most satisfactory method, strict attention always being paid to diet and rest. He has treated about 150 patients with emetine hydrochlorid. In some of these the treatment had no effect whatever, and those, according to Rogers, are of bacillary origin. So, therefore, not only does emetine cure the amebic variety (which constitutes about 85 per cent. of the dysentery in Thompson's district), but it serves for a differential diagnosis for bacillary dysentery, and thus enables it to be quickly treated along the proper lines.

Journal of Obstetrics and Gynecology of British Empire, London

July, XXIV, No. 1, pp. 1-60

22 Study of Forceps. A. Doran.
23 *Some Sequelae of Labor. B. Solomons.
24 *Operation for Prolapse Complicated by Hypertrophy of Cervix. W. E. Fothergill.
25 Hemorrhages into Angiomatous Fibromyoma of Uterus and Atheroma of Uterine Arteries. W. F. Shaw.

23. **Sequelae of Labor.**—Examining 543 primiparae sixteen days after labor, Solomons found that cervical laceration after normal labor is very common, occurring 219 times in this series. If it occurs, and hemorrhage is present, immediate suture should be practiced: if no hemorrhage, the tear should be sewn in two months, or else a routine examination should be made of all women at the end of their child-bearing period, when all lacerated cervices should be repaired. Postpartum retroversion of the uterus, when not fixed back by inflammation, is caused by the dorsal decubitus. The best treatment, therefore, is postural. Solomons urges that every patient should be examined once a month for at least four months after confinement. When non-union of a stitched perineum occurs, a second perineorrhaphy should be done immediately in aseptic cases. Solomons says that no definite dictum can be laid down about early rising until some more statistics are published. In normal clean cases postural treatment and gymnastic exercises are advised.

24. **Operation for Prolapse Complicated by Hypertrophy of Cervix.**—Fothergill uses a single incision for both the amputation of the cervix and the excision of the redundant vaginal wall and has found the results more satisfactory than those obtained by doing the operations separately. The cervical canal is dilated and a circular incision is made round the cervix with a knife. The vaginal wall, the bladder and the parametria are then snipped free with scissors and pushed back from the cervix. The vaginal wall is next incised for an inch or so on either side of the circular incision already made, the new cuts extending directly to the right and to the left. The anterior vaginal wall is now separated from the parametric tissues and from the bladder, and a triangular portion with its apex near the urethral aperture is cut away. The cervix is next amputated, enough being cut away to leave the uterus 3 inches long. The stump of the cervix is now stitched into the posterior part of the incision. The first suture brings together the central point of the posterior limb of the vaginal incision and the mucosa lining the posterior wall of the cervical canal. The second and third stitches unite vaginal wall and cervical mucosa right and left of the first. And so on, until the sides of the vaginal incision come together in front of the stump of the cervix. By this time the newly constructed os is beginning to disappear upward and backward. The lateral edges of the vaginal wound with the subjacent connective tissue are brought together in the middle line from behind forward. The line of suture disappears from view as the later sutures are tied. The perineum is finally repaired as before. Fothergill finds this method of operating convenient both when the elongation of the cervix is mainly supravaginal and also when the elongation mainly affects the vaginal portion.

Lancet, London

August 23, II, No. 4695, pp. 521-606

26 *Tuberculin Treatment. H. Mackenzie.
27 Use of Radium in Malignant Disease. R. Abbe.
28 Preventive and Curative Treatment of Industrial Lead Poisoning. T. Oliver.
29 *Investigations into Relationship of Tarbagan (Mongolian Marmot) to Plague. G. L. Tuck.
30 *Presence of Acetone Bodies in Urine and Their Clinical Significance. J. E. Piper.

26. **Tuberculin Treatment.**—Tuberculin treatment in Mackenzie's opinion is still on its trial. The results of it so far are not brilliant, certainly not convincing. Vaccine treatment, as a whole, is on its trial, and if we except staphylococcus infections, Mackenzie says no more can be said for vaccines than for tuberculin. He has never seen a person who has been cured by vaccines of anything of which he could not get well without. He has yet to see absolute convincing proof that tuberculin treatment by itself will arrest or cure or improve a larger number of cases than would have arrived at the same results without the treatment. Until we have that we must preserve an open mind on the matter. The fact is that tuberculin as a remedy, if it is a remedy, must be put on a far lower plane than many remedies which we possess for the treatment of disease. The most that can be claimed for tuberculin is that it promotes the natural defenses of the body. That is something, but the same can be claimed for fresh air, for good food, for hygiene, for care, for climate, and for all the other weapons which we possess.

Much, in Mackenzie's opinion, remains to be done to prove that tuberculin possesses any very high value as a remedy. Let it be shown, he says, that tuberculous disease in animals can be cured more readily or arrested by means of tuberculin treatment than without. For a number of years Mackenzie used tuberculin in a large number of cases. He has used extract and endoplasm. He has given it orally and subcutaneously and at longer and shorter intervals. He has given it in repeated small doses and in gradually increasing doses. He has used it, he says, because he felt it ought to have a full trial. But after all the trials he has made he still feels uncertain as to the value of tuberculin.

29. **Relationship of Tarbagan to Plague.**—Even though the tarbagan occasionally suffers from plague, Tuck says, the epizootic is never extensive, and the animal does not play nearly so important a rôle in the spread of plague as does the rat. Indeed, its direct relationship to human plague may be considered negligible. Moreover, the mode of living and habits of the tarbagan are very different from those of the rat; for example, while the rat is a more or less domestic creature in close contact with man, the tarbagan is the reverse.

30. **Acetone Bodies in Urine.**—In his ward work Piper found that an attack of pain in the pelvis or abdomen, such as a mild attack of appendicitis or salpingitis, will produce diaceturia. If the attack passes away the diacetic acid will be eliminated in a few days and will disappear at once if pancreatin be administered. If the pain persists, or reappears at short intervals, the diaceturia will persist in spite of the pancreatin, although it will be greatly lessened thereby. If the pain becomes more acute the patient will commence to vomit. The urine of the patient is now examined, and the examiner will say that either the vomiting is due to the acetone or the acetone is due to the vomiting. The suggestion that the error in metabolism was occurring earlier and that oxybutyric acid was exerted instead of acetone is refuted by the fact that diacetic acid will react at a dilution of 1 in 120,000, and surely this percentage at least would be present if oxybutyric acid was formed.

In treating these patients Piper has followed out the two common methods of treating diaceturia as well as one of his own. He treated only patients who had no acetonuria before operation when comparing the three methods, viz., treatment by sodium bicarbonate, by glucose, and by pancreatin—and he found that sodium bicarbonate had little or no effect, that glucose had an appreciable effect, but was simply dwarfed out of existence by the pancreatin. He gave 25 grains again as soon as possible after the operation, and in only one case out of a large number did he find any acetone present, and then only a trace. It is quite possible, he says, that this patient did not get all the pancreatin ordered. In cases of preanesthetic acetonuria, measured quantitatively, he found the amount diminished after operation under this treatment. He tested the pancreatin in all cases and found that it digested starch, although in some cases the process was slow. There was no carbohydrate in the stomach or intestine for it to break down, as the patient had had the usual starvation preparation. To effect this strong and undoubted reaction it must be absorbed in the blood; but what does it do then?

Medical Press and Circular, London

July 30, XCVI, No. 3873, pp. 107-132

31 Puerperal Eclampsia and Its Treatment. J. Veit.
32 Apex-Treatment for Pulmonary Consumption. W. Ewart.
33 *History and Origin of Leukocyte (White Blood-Corpuscle). H. D. McCulloch.
34 Some Aspects of Internal Secretion in Disease. G. R. Murray.
35 Medical History of Brighton. W. A. Hollis.

August 6, No. 3874, pp. 133-160

36 Diagnosis in Respect of Certain Symptoms and Signs in Children. S. Neave.
37 Gifts of Surgery to Medicine. B. Moynihan.
38 *Chronic Mediastinitis: Its Causes, Forms, Symptoms and Treatment. C. Lian.
39 Apex-Treatment for Pulmonary Consumption. W. Ewart.

August 13, No. 3875, pp. 161-186

40 Osteomyelitis in Infants. E. Kermisson.
41 Apex-Treatment for Pulmonary Consumption. W. Ewart.
42 Chronic Mediastinitis: Its Causes, Forms, Symptoms and Treatment. C. Lian.
43 Medical Prognosis: Its Methods, Evolution and Limitations. A. Chauffard.

33. **Origin of Leukocyte.**—McCulloch holds that leukocytes are in no sense of the term blood-cells, and that the expression "white blood-cells" is a misleading anomaly. He believes that they are a part of the lymphoid system.

38. **Chronic Mediastinitis.**—There are two conditions in Lian's opinion in which energetic treatment of mediastinitis is to be instituted. 1. In presence of syphilitic mediastinitis intensive treatment is called for, either with soluble mercurial salts, especially the cyanid of mercury, by the intravenous method, or with insoluble salts (especially calomel) or the arsenicals in prudent doses. The influence of the treatment is remarkable at the period of gummatous infiltration and that of invasion of the mediastinum; it is less efficacious when the mediastinitis is fully constituted. 2. In mediastinopericarditis freeing the heart by Brauer's method has yielded good results in some instances. It is indicated in cases of mediastinitis with pluricostal systolic retraction at the apex if the myocardium is not exhausted. In tuberculous mediastinitis we have recourse to general antituberculous measures, but in most cases we shall only be able to employ palliative means and first and foremost patient must be placed at rest under hygienic conditions of life, because this alone often has an excellent influence.

South African Medical Record, Cape Town

May, XI, No. 10, pp. 173-198

44 Leprosy in South Africa, up to Establishment of First Leper Asylum, Hemel en Aarde. R. Morrow.
45 Administrative Side of Leprosy Question. C. F. K. Murray.

June, No. 11, pp. 199-226

46 Critical Review of Recent Experimental Leprosy Research. H. Bayon.

Annales de l'Institut Pasteur, Paris

July, XXVII, No. 7, pp. 501-596

47 Diseases of Microbian Origin in Economic Plants. (Altérations microbiennes des organes charnus des plantes.) L. H. Merck.
48 Dialysis of Maltase. W. Kopaczewski.
49 Nephritis and Cirrhosis of the Liver in Rabbits Kept on a Milk Diet. (Néphrite et cirrhose hépatique chez le lapin soumis a l'alimentation lactée.) L. Martin and A. Pettit.
50 *Anaerobes in Typhoid Fever. J. Loris-Melikov.
51 Properties of Perioxydase. (Quelques propriétés nouvelles du catalyseur dit "peroxydase." Rapprochement entre son action et celle des nitrites.) J. Wolff.
52 Causes of Error and Technic to Avoid Them in Estimating Percentage of Glucose in Stools and Other Physiologic Mediums. (Technique de dosage du glucose dans les matières fécales.) L. H. Dejust.

53 *The Spirochetes of Syphilis in the Brain in General Paresis. (Le tréponème dans le cerveau des paralytiques généraux.) C. Levaditi, A. Marie and J. Bankowski.

50. **The Anaerobes in Typhoid Fever.**—Melikov has found in the stools of typhoid patients a bacterium which he thinks has not been previously described, an anaerobe; he calls it the satellite bacillus. He never found it in any but typhoid stools, and he believes that it is responsible in a large part for the intestinal lesions in typhoid. He conceives of typhoid as a syndrome combining two distinct processes, one of the septicemic type, due to the action of the true typhoid bacillus which lives in the general circulation or in the blood-producing organs; the other, a process of necrosis, occurring exclusively in the portions of the intestines which contain no air, due to the action of a strictly anaerobic, powerfully proteolytic bacillus, the *B. satellitis*. Usually these two processes develop together, both microbes associated in the intestines; then one or the other gets the upper hand and we have the toxic element predominating or the intestinal element.

53. **Spirochetes in the Brain in General Paresis.**—Examination of the brain of nine persons who had died from cerebral hemorrhage from one to fourteen months after the onset of progressive paralysis showed spirochetes in all but one case. In all the positive cases the men had succumbed to a cerebral hemorrhage. In three cases the spirochetes were as numerous as in a primary lesion. See also Editorial, page 776.

Archives Mens. d'Obstétrique et de Gynécologie, Paris

August, II, No. 8, pp. 49-96

54 Obstetric Pseudoluxation of the Shoulder in the New-Born. (De la disjonction diaphyso-épiphysaire traumatique de l'extremité supérieure de l'humérus chez le nouveau-né.) E. Bonnaire and G. Ecalle.

Bulletin de l'Académie de Médecine, Paris

July 29, LXXVII, No. 29, pp. 143-179

55 Tuberculosis in Dogs and Cats. (Sur la tuberculose des carnivores domestiques.) Cadiot.

Journal de Chirurgie, Paris

August, XI, No. 2, pp. 141-268

56 *Ligation of the Hypogastric Artery in Abdominal Hysterectomy for Cancer. R. Proust and A. Maurer.
57 Apparatus for Inhalation of Chloroform. (Nouvel appareil pour l'anesthésie chloroformique.) P. Fredet.

56. **Ligation of Hypogastric Artery in Abdominal Hysterectomy.**—Proust and Maurer used to ligate the hypogastric artery only when the women were corpulent or other conditions rendered the hysterectomy unusually difficult. But it proved to have so many advantages that they now do it systematically as the first routine step. It facilitates the search for the ureter, shortens the operation as a whole, reduces the loss of blood, and facilitates the removal of the uterus. In order to obtain all these advantages the hypogastric must be ligated beyond the ureter, not inside of it, the ureter being drawn inward out of the way. The ligature is applied to the hypogastric artery not through a separate incision in the peritoneum, but in the upper part of the principal incision, and the point where it is applied must be at farthest not over 2 cm. from the bifurcation. They give seven large illustrations showing the exact technic as they have applied it in eight cases of uterine cancer.

Journal de Médecine de Bordeaux

August 3, LXXXIV, No. 31, pp. 495-508

58 *Poisoning from Anilin Dye in Shoes or Stockings. (L'empoisonnement par les chaussures noircies à l'aniline.) Creyx.

August 17, No. 33, pp. 525-540

59 Case of Mesenteric Thrombosis. G. Drouin and A. Parcelier.
60 Care of Surgical Instruments. (Des soins à donner aux instruments de chirurgie.) W. Dubreuilh.

58. **Poisoning from Anilin Dyes in Footwear.**—In one case a healthy young man wore a pair of russet shoes which had been dyed black and were still not quite dry. In two hours he became livid, with extreme cyanosis, the lips bluish, the ears purple, the nostrils retracted; the respiration was 29, the pulse, small but regular, was 120 and the skin was chilly, but there was no nausea, dizziness, syncope or tendency to collapse. The urine was blackish but none passed after the first hour. The discovery of the newly blackened shoes in a corner of the room where the young man had tossed them on his return home in the above condition, three hours after he had put them on, cleared up the diagnosis. The symptoms soon subsided. In a second case the young man had put on the newly dyed shoes without socks and started out on his bicycle. In fifteen minutes he was seized with nausea, and fell in a syncope from his wheel. He was picked up in serious collapse with intense cyanosis of the face, respiration 42, pulse filiform, the heart sounds dull. After four hours he passed a blackish urine and in another hour the symptoms began to abate but the weakness persisted for three days, during which period the young man was incapable of the least physical or mental effort. Creyx' third patient was a woman who grew pale and dizzy during the afternoon on several occasions. She went at once to bed each time and the symptoms subsided. She finally discovered that the attacks coincided with the wearing of green stockings, and they never recurred after she had discarded these stockings. In 1910 Landouzy reported ten cases of similar poisoning from russet shoes dyed black, all in children. He experimented on rabbits and found that the intact skin readily absorbs the anilin dyes; the animals died when absorption was through an opening in the skin. Heat favors the absorption. Mongour in 1908 reported a case in which the symptoms from the poisoning proved severe and lasted a long time. Creyx comments on the rarity of such phenomena considering the common use of the anilin dyes. The shoemaker who had dyed the shoes in the first case he reports stated that he had used the same dye on hundreds of other shoes, in his own family among others, and never a suggestion of trouble had been noted among the other users. The dye consisted of anilin black in anilin oil. The bibliography on the subject is appended.

Presse Médicale, Paris

August 2, XXI, No. 63, pp. 633-644

61 Experimental Cancer. A. Contamin.
62 *Treatment of Weakness of the Pulse. (Traitement des hypospphyxies.) A. Martinet.
63 *Local Disinfectants Needed in Diphtheria. (Action du sérum antidiphthtécique médicinal sur le bacille diphtérique.) P. J. Ménard.

August 6, No. 64, pp. 645-652

64 Diagnostic Importance of Examination of the Stools. (La coprologie usuelle. Son interprétation.) R. Goiffon.
65 Echinococcus Cyst of the Greater Omentum. (Kyste hydatique primitif.) A. Ferrer.

August 9, No. 65, pp. 653-668

66 Polycythemia with Ascites. (Erythrémie avec ascite, phlébite de la splénique et thrombose gastro-épiploique.) A. Chauffard and J. Troisier.
67 *Spontaneous Regeneration of Tissue to Close Defects Favored by Position in which Parts are Held. (L'autoplastie spontanée par extension graduelle des tissus, grace aux attitudes permettant la réunion immédiate.) H. Morestin.
68 Tumors Simulating Branchiomas. (Faux branchiomes.) P. Masson.
69 Cesarean Section. (Comment conçoit-on actuellement en France la technique de l'opération césarienne abdominale.) C. Jeannin.

August 13, No. 66, pp. 669-676

70 *The Prognosis. (Le pronostic médical. Ses méthodes—son évolution—ses limites.) A. Chauffard.

62. **Weakness of the Pulse.**—Martinet's extensive research on the connection between the viscosity of the blood and the blood-pressure was summarized in these columns May 31, 1913, p. 1746. If the blood is less fluid than normal while the blood-pressure is normal or below normal, the pulse will be persistingly weak. This hyposphyxia syndrome, as he calls the persisting weakness of the pulse, is characterized by a tendency to cold hands and feet, congestion in the liver, varices, and various subjective cardiovascular disturbances. Insufficiency of certain of the ductless glands is a contributing or causal factor, helping to maintain a vicious circle. In the present article he outlines the treatment which, he declares, is both rational and effectual. The trouble is not a morbid entity but merely a process of pathologic physiology, a functional disturbance and not a lesion, and the aim is to correct

to compensate the defective functioning, gradually leading the organs involved back to normal functioning. The first step is to stimulate the circulation, and for this we have (1) drugs, strychnin and spartein, epinephrin or hypophysis extract, given separately, associated or alternating; (2) muscular exercise, ranging from friction, massage and passive exercises, active movements in the reclining position, gymnastic exercises with elastic resistance, up to walking and climbing; (3) subcutaneous injection of oxygen, which, he says, has a marked stimulating influence on the circulation while the viscosity of the blood declines. The subcutaneous injection of oxygen is the most powerful means at our command, he reiterates, to act on hyposphyxia.

The digestion is almost invariably defective in patients of this class, and systematic stimulation of the digestive glands is an important factor in treatment. His method for this is to have the reclining patient half an hour before meals take a wineglassful of tepid Vichy water and twenty minutes later a few drops of some bitter stomachic. This prepares the stomach for the meal and stimulates the gastric glands. During the meal the patient takes a little of some good preparation of pepsin and two hours after the meal a tepid aromatic infusion of pancreatic and duodenal extracts, including the trypsin, diastase and steapsin. This organotherapy is to be brief; it only aims to tide the patient along until the glands do their work properly. If kept up too long it would be injurious as it might deaden the secretion reflexes. He thinks it is advisable to alternate the subcutaneous epinephrin and hypophysis extract treatment with ovarian and thyroid treatment, individualizing according to the indications and the responses to the various measures applied.

To the objection that the above represents a very complicated course of treatment, he replies that the trouble that is being treated is very complex. It requires systematic permanent measures, alternating transient measures, plus various accessory measures. After ten days he changes from the subcutaneous stimulants for the cardiovascular system (strychnin, spartein, epinephrin, hypophysis extract) to the pluriglandular organotherapy and back again, keeping up for several weeks the measures to act on the digestion or until they are no longer needed. Besides the oxygen, or in its place, iodin or arsenic may also prove useful. Treatment along these lines has restored many patients to complete health when before for months or years their vitality had been at a very low ebb and nothing seemed able to lift them out of their debility. In one case a thin, weak woman of 30 had a differential blood-pressure of 1.5; viscosity 5.2, and extreme atony of the stomach and bowels. She gained 22 pounds in five months and 11 more by the end of the year under this treatment, while the differential pressure rose to 4.5; the viscosity dropped to 4.5, and her digestion became normal. She has resumed an active life and regards her present condition as a resurrection.

When the hyposphyxia is congenital and due to general imperfect development of organs, adults are improved but not to such an extent as is liable under other conditions; but children develop under it into more normal conditions. For three women patients the above course of treatment did not bring the expected improvement and the Wassermann test disclosed the unsuspected fact that syphilis was probably responsible in these cases for the disturbances.

63. **Local Measures in Treatment of Diphtheria.**—Ménard reports research in which he found that diphtheria antitoxin seems to be a particularly favorable culture medium for diphtheria bacilli. Both in the test-tube and in animals, the bacilli thrived particularly well in a number of makes of antitoxin. He found it possible to cultivate the diphtheria bacilli for months in the antitoxin, although they lose some of their virulence and some of their staining properties. The facts observed indicate the necessity for the use of local disinfectants as adjuvants to general antitoxin treatment in diphtheria.

67. **Autoplastic Regeneration of Tissues to Close Defects.**—Morestin gives a number of illustrations to show the fine results that can be attained in the healing of a wound in the bend of the elbow or thigh or back of the knee if the limb is fastened in such a way as to coaptate the tissues enough to close the gap. Sound, healthy tissue does not retract and cause deformity; it is the cicatricial tissue that distorts. Consequently if the sound tissues can be brought so close together that there is no place left for cicatricial tissue to develop, the wound will heal without the slightest retraction and the healthy skin will stretch in time to restore perfect functioning, once the lips of the wound have been soldered together by linear healing. One of his illustrations shows a vast defect left by excision of a lesion in the front of the elbow. By bending the arm until the wrist nearly touched the shoulder, it was possible to coaptate the lips of the wound, and it healed with a linear scar. When the healing was complete it proved an easy matter to gradually stretch the skin by extending the arm a little more each day, until its full use was restored. This idea of applying hyperflexion to the region seems to be contrary to all we have been taught in respect to the healing of defects in the skin over joints, but experience is proving the correctness of his premises and the advantages of this method of preventing deforming cicatrization after burns and other lesions leaving extensive loss of substance. He reports six cases to illustrate the advantages of the method. One of the patients was a young woman and the large defect was on the back of the shoulder. The arm was twisted backward and immobilized in that position. This permitted coaptation of the lips of the wound and healing with a linear scar scarcely to be detected in the illustration. The skin is now healthy, supple and movable over the entire shoulder.

70. **The Prognosis.**—This was one of the main general addresses of the recent international medical congress.

Semaine Médicale, Paris

August 13, XXXIII, No. 33, pp. 385-396

71 *Subcutaneous Symphyseotomy. R. de Bovis.

August 20, No. 34, pp. 397-408

72 Partial Atrophy of the Shoulder Muscles in Erb's Juvenile Myopathy. F. Rose.

71. **Subcutaneous Symphyseotomy.**—De Bovis reviews what has been written on this subject, emphasizing that the pelvis is not permanently enlarged by the operation. The amazing simplicity of the subcutaneous technic, the aseptic conditions and the freedom from complications and mishaps, will render this operation the one of choice in management of contracted pelvis if time confirms its advantages and if no tendency to prolapse of the bladder is left. The operation is of too recent date as yet to guarantee against a possible tendency later to prolapse of the bladder in the cleft.

Archiv für Verdauungs-Krankheiten, Berlin

August, XIX, No. 4, pp. 409-500

73 *Simple Test for Absorption of Fat. (Zur Methodik der Fettresorptionsprüfung.) A. Neumann.
74 Gastro-Intestinal Indicanuria. K. Frenkel and R. Franco.
75 *Significance of Urobilin and Urobilinogen in the Body Fluids. (Welche Bedeutung hat der Nachweis des Urobilinogens gegenüber dem Nachweise des Urobilins?) W. Hildebrandt.
76 Causes and Treatment of Vomiting in Pregnancy, in Tabes and in Seasickness. (Neue Gesichtspunkte für die Aetiologie und Therapie des Erbrechens in der Gravidität, bei Tabes und in der Seekrankheit.) W. Sternberg.
77 *Influence on Blood Production of the Albumin in the Food. (Einfluss des Nahrungseiweisses auf die Bluterneuerung.) F. W. Hopmann.
78 Diagnostic Significance for Cancer of Special Form of Diarrhea. (Zur diagnostischen Bewertung der "Spritzer" genannten diarrhoischen Entleerungen.) G. Graul.

73. **Test for Absorption of Fat.**—Neumann states that it is possible to trace the absorption of fat in the gastro-intestinal tract by the appearance of fat in the blood. Of the various methods for determining the presence of fat in the blood he thinks the simplest, easiest and most reliable, as it certainly is the most rapid, is the examination of the blood with the ultra-microscope, the dark field illumination. He examined the blood in this way from 120 patients after abstention from fat for a day and the next morning a test-meal of a roll, butter and tea. The blood was then examined at hour inter-

vals. Sometimes in an hour after the test-meal the blood showed the particles of fat; normally the number of the fat particles in the blood rapidly increases for a time and then rapidly subsides. The fat in the blood represents the complicated work of the gastro-intestinal tract in secretion, motor functioning and absorption. If the motor functioning can be estimated separately, then it is easy to determine the actual value of the two other factors. If motor functioning and secretion are normal and yet no fat appears in the blood after the normal period, the absorbing function must be at fault. He gives the blood-fat findings as compared with the roentgenoscopic findings in six cases, emphasizing anew in conclusion the advantages of this method of testing the function of absorption in the digestive tract.

75. **Urobilin from Diagnostic Standpoint.** — Hildebrandt declares that estimation of the urobilin in the urine, stool, bile, in exudates and in transudates has great significance both qualitative and quantitative. The aim should be, he says, to determine the amount of total urobilin, including all its precursors; there is no sense in estimating separately the urobilin and the urobilinogen. He oxidates all the urobilinogen present in the fluid to be examined, transforming it into urobilin. He gives the technic with which this is easily accomplished in twenty-four hours, and warns that the test for urobilinogen is liable to prove misleading unless it is applied immediately after the urine has been voided.

77. **Influence of Albumin on Regeneration of the Blood.**— Hopmann concludes from his research that the albumin in the food is the normal stimulator of the new production of red corpuscles. The more albumin in the food the more reds are destroyed and the more new ones produced. He says that each gram of nitrogen ingested corresponds to about that same amount of reds destroyed and newly produced. Too much albumin in the food fatigues or exhausts the blood-producing organs, and he is convinced that this is the cause of many forms of anemia. In anemia and also when too many reds are being produced, the intake of albumin should be restricted to the limit at which there is neither abnormally high or abnormally low elimination of pigment. He adds that the danger of excessive intake of albumin in chronic and acute anemias consists on the one hand in further exhaustion of the sources of the reds in the red bone marrow and on the other hand the albumin modifies the epithelium. This entails a constitutional anomaly which he regards as the cause for the development of malignant tumors. He gives the tabulated details of the metabolic findings in five cases to sustain these views, showing the influence of ingestion of a given amount of meat. The effect of the albumin on the epithelium he estimated by the amount of epithelium thrown off on a certain area in the back and in the urogenital canal under given conditions.

Beiträge zur klinischen Chirurgie, Tübingen

LXXXIV, No. 3, pp. 499-703

79 *Fat Implants as Filling for Cavities in Bones. (Freie Fetttransplantation in Knochenhöhlen.) E. Klopfer.
80 Lymphangiomas; Five Cases. W. Müller.
81 *Radioscopic Sign of Dislocation of the Semilunar Cartilage. (Die Verschmälerung des Kniegelenkspaltes bei vollständiger Verlagerung des Meniscus.) E. Schwarz.
82 Pigmented Giant-Celled Xanthosarcomas on Hand or Foot. W. Hartert.
83 End-Results of Operative Treatment of Incarcerated Femoral Hernias. (Operative Dauerresultate von eingeklemmten Schenkelhernien.) H. Rosenfeld.
84 Physiologic and Pathologic Importance of the Omentum. (Bedeutung des Netzes in physiologischer und pathologischer Beziehung.) W. Gundermann.
85 *Fatal Postoperative Pulmonary Embolism. (Studien über obturierende Lungenembolie als postoperative Todesursache.) G. Petren

79. **Fat as Filling for Bone Cavities.**—Klopfer gives an illustrated description of eight cases in which he filled up the cavity left after excision of an extensive osteomyelitic or tuberculous focus in a long bone or bone of the face. The implant heals in place without complications in an aseptic cavity. It heals likewise in place in an infected cavity, but a fistula is liable to develop, delaying healing a little. In the three aseptic cases healing was complete in seventeen, twenty-eight and sixty days. The others still had a small fistula when healing was otherwise complete. The fat implant seemed to shorten the time required for the healing, and the after-care was much simplified by the immediate suture of the wound thus rendered possible. The subcutaneous adipose tissue was taken from thigh or buttocks, aiming to fill the bone cavity entirely, thus tamponing it with the fat tissue so there would be no hemorrhage. The size of the flap ranged from 1.5 to 20 cm. in length by 2 or 4 cm. in width. In two of the infectious cases some particles of fat were expelled through the fistula. It is too soon to pass definite judgment on the method but Klopfer's impressions to date are quite favorable.

81. **Radioscopic Sign of Dislocation of the Semilunar Cartilage.**—Instead of the normal even light space between the articulating surfaces, they are seen to be in close contact on the affected side and spread farther apart than normal on the other side. Investigation shows that the internal semilunar cartilage has been pushed entirely out of place, possibly up into the space between the condyles. When roentgenoscopy reveals this shortening of the gap and subluxation of the meniscus it calls at once for restoration of the meniscus to its proper place. Three cases in which this was successfully done are reported.

85. **Fatal Postoperative Pulmonary Embolism.** — Petren reviews the fifty-seven cases of fatal pulmonary embolism at Lund during 1897-1911; all but twelve followed an operation. He compares the details of these cases with 439 fatal postoperative cases that have been reported from various clinics during the last fifteen years. The majority followed abdominal operations: thirty-eight in his forty-five cases and 366 in the 439 on record. It is remarkable that operations on the head, limbs and upper thorax are so seldom followed by embolism. He tabulates all this material under a number of headings and summarizes his own cases. The figures show that fatal pulmonary embolism occurs in about 1 per cent. of all operations for uterine myoma and cancer; only half as often, 0.5 per cent., after other laparotomies, and only 0.3 per cent. after appendectomy. Age and sex do not seem to influence its incidence, nor the general condition as a rule, although changes in the cardiovascular system evidently cooperate. But it has sometimes occurred in robust, sound patients after an insignificant herniotomy. In half of his own cases the thrombus developed first in an iliac or hypogastric vein and generally on the left side. In six appendicitis cases the primary thrombus was in the left hypogastric vein in five; in none of the appendicitis cases was the thrombus on the right side. The evidence seems to show that the primary thrombus is rarely directly connected with the field of operation; scarcely ever with the surgical laparotomies, only exceptionally after hernia, bladder and perineum operations and in less than half of the gynecologic laparotomies.

In his own experience two-thirds of the fatalities occurred between the fourth and fourteenth days after the operation; three puerperal cases the eighth and ninth days, and four the thirteenth to the twentieth. If there are no signs of pulmonary infarct or embolism during the first two weeks, the chances are against its developing later. Petren's experience indicates further that slight fever without discoverable cause should warn of impending thrombosis. In 20 per cent. of his cases, straining at stool, change of position in changing dressings, driving in a cab, or other physical strain could be incriminated in bringing on the embolism. In the other cases no contributing cause could be discovered. Infection is comparatively rarely a factor. The main factors, he thinks, are defective composition of the blood and poor circulation and heart action. These factors should be combated in prophylaxis, improving the blood, stimulating the heart, preventing loss of blood and promoting the circulation by active and passive exercises of the legs in bed, change of position and light massage of the legs. In only seven of his total fifty-seven cases were conditions such that operative extraction of the embolus could have been applied with any chance of success.

Berliner klinische Wochenschrift

August 11, L, No. 32, pp. 1465-1508

86 Vaccine Therapy of Complications of Gonorrhea. (Behandlung der Komplikationen der Blennorrhagie mittels der Besredka'schen Methode der sensibilisierten Virus-Impfstoffe.) L. Cruveilhier.
87 *Treatment of Blood Diseases. (Zur Klinik der Hämatologie.) H. Strauss.
88 *Palpation of Gastro-Intestinal Canal. (Ergebnisse der topographischen Gleit- und Tiefenpalpation des Verdauungsschlauches.) T. Hausmann.
89 Clinical Importance of Occult Spina Bifida. E. Bibergeil.
90 Care after Appendectomy. Sorge.

87. **Hemolytic Jaundice.**—Strauss reports a case in which the chronic acholuric jaundice was associated with severe gout of the familial type. In another case the hemolytic jaundice in a man of 31, had existed since the age of 12 when it developed after pneumonia. All his brothers and sisters had had jaundice at birth. This is the only case in Strauss' experience in which the spleen was not enlarged. Lereboullet found no changes in the spleen and liver in four of his twenty cases of simple chronic jaundice. In the others the spleen alone was enlarged in five cases, the liver alone in three and in eight both were abnormal. Strauss emphasizes the importance of learning to distinguish between the cases in which the spleen is involved in the production of the trouble and those in which the enlargement of the spleen is merely secondary. Possibly Umber's sign of a splenotoxic destruction of albumin may prove the clue when complicated metabolic research is possible. He gives the findings in the above cases with considerable experimental research. In some of the cases there could be no doubt that the spleen was acting as a kind of slaughter-house for red corpuscles.

In four of his six cases there was pronounced habitus asthenicus. The combination with gout in one case suggests that possibly cholesterin might be used in treatment of the hemolytic tendency, but the experiences to date with cholesterin treatment of severe anemia have not given encouraging results. In another case the blood-producing apparatus seemed to have become exhausted after a gastric hemorrhage from an ulcer, and nearly three years later the anemia was still marked without signs of regeneration of the blood. The hemoglobin ranged from 21 to 29 and no therapeutic measures seemed to influence it, not even thorium. In a case of myelogenous leukemia in a previously healthy man of 60, the leukocytes dropped from 271,000 to 151,000 under forty-five days of benzol treatment. Then two intravenous injections of thorium were given with a three weeks' interval and the whites dropped to 62,000 while the spleen subsided in size.

88. **Palpation of the Gastro-Intestinal Tract.**—Hausmann has made a special study for years of this subject, and states that it is thus possible to map out the different parts of the digestive tract all except the loops of the small intestine. The main point in this topographic sliding and deep palpation is to avoid force. The palpation must be applied gradually and insidiously, proceeding rhythmically, synchronously with the breathing, during the phase of expiration, when the abdominal walls are relaxed. During inspiration the finger must keep still. It is impossible to palpate in this way unconscious patients as they do not breathe normally. By observing scrupulously this principle of stopping all palpation during inspiration, there is no danger of injuring the abdominal walls; the finger tip irritates the abdominal walls only when it manipulates them when they are stretched. The aim is to outline the organ lengthwise and then palpate transversely across it. An organ which we are unable to distinguish from its surroundings, and thus cannot feel, becomes evident to the sense of touch when it slides out from under the finger. The palpation is done systematically from right to left and from above downward. The stomach and large intestine are most readily palpable and being fastened at both ends can be easily located. The interpretation of the findings is facilitated by the preceding palpation of the kidneys, liver and spleen to aid in mapping out the palpation findings. With this topographic palpation displacements and tumors can be located with ease by the practiced fingers, and it often renders Roentgen-ray examination superfluous. Among the interesting points he has learned by this method is that the epigastric pain of an ulcer is due to tenderness in the spine behind, below the greater curvature, and it occurs not only with ulcer but with visceral neuroses and gall-stones. As a rule, he says, tender points are seldom useful in diagnosis of a lesion in an organ unless they can be compared with a symmetrical point on the other side. Tenderness on one side is more liable to be due to some organ; on both sides to some neurosis. Pain at McBurney's point is in reality due to irritation of the psoas muscle or nerves or lymphatics lying on it. This muscle can be made more prominent by lifting the leg, extended at the knee. Tenderness at different segments of the psoas shows whether the trouble is in the kidney region or in the region of the genitals or of the appendix. It is characteristic for the kidney region that the upper part of the psoas is tender as well as the lower. Spontaneous movability of the stomach, etc., is easily revealed by this deep palpation. The necropsy findings may fail to confirm the findings during life owing to this spontaneous movability of organs.

Correspondenz-Blatt für Schweizer Aerzte, Basel

August 9, XLIII, No. 32, pp. 993-1025

91 Benefit from Tincture of Opium in Treatment of Diabetes. A. Preiswerk.

Deutsche medizinische Wochenschrift, Berlin

August 7, XXXIX, No. 32, pp. 1537-1576

92 *Dietetic Treatment of Constipation and Diarrhea. H. Strauss.
93 Tuberculous Pericarditis. (Tuberkelbazillenpericarditis.) C. Fromberg.
94 *Thrombosis of Splenic and Portal Veins. G. Goldmann.
95 *Tardy Ophthalmia Neonatorum. (Zur Kenntnis der Einschlussblennorrhoe der Neugeborenen.) R. Sussmann.
96 Chronic Appendicitis. (Zur Pathogenese der sogen. "chronischen Blinddarmentzündung.") R. Dobbertin.
97 *Acute Non-Gonorrheal Orchitis and Epididymitis; Four Cases. H. Stroink.
98 *Tardy Injuries from Roentgenotherapy. (Spätschädigungen der Haut und innerer Organe nach therapeutischer Röntgenbestrahlung.) H. E. Schmidt.
99 Source of Error in Bacteriologic Technic. (Eine Fehlerquelle bei der Antiforminmethode.) A. v. Lehmann.

92. **Dietetic Treatment of Constipation and Diarrhea.**—Strauss excludes from this discussion of the subject the cases in which the trouble is a weakness in defecation. He is convinced that spastic conditions are frequently responsible for constipation but that they usually have some local lesion as a contributing or causal factor. Another factor of great importance is the special segment of the intestine involved. In twenty-nine cases of chronic constipation, he found isolated stagnation of feces in the cecum in six; in the rectum and sigmoid flexure in eleven, and in the colon in twelve. These different localizations require different diets. Stagnation in the cecum requires a diet free from cellulose. Stagnation at the sigmoid flexure is scarcely amenable to dietetic measures. The aim in treatment of constipation is to stimulate peristalsis and increase the water content of the feces. The former indication is met by apple sauce, and other stewed fruits, fruit juices and fruit jellies; they act mainly by inducing carbohydrate fermentation in the intestines. Also buttermilk, sour milk, whey and the free use of lactose to sweeten lemonades, etc., honey and levulose. A certain amount of fat, especially in the form of tart sauces, mayonnaise, etc., seems to influence peristalsis favorably. To increase the water content of the feces, jellies made of agar are particularly useful. He rinses 5 gm. of agar in cold water, then soaks it in hot water and boils it in 400 c.c. of water until it is clear, then strains through gauze and flavors with white wine, sugar and lemon peel, coffee, chocolate cream or egg yolk and sets aside to cool. Much ballast makes greater demands on the work of the intestines; it is better therefore in dietetic treatment to aim rather at increasing the fluid content of the stool. In some cases a glass of cold water fasting, in others coffee or smoking may stimulate peristalsis, and these factors should not be neglected. In some cases, especially those with a neurotic element, abstention from meat for a time may be useful. With chronic diarrhea the diet should be arranged to spare the intestines as much as possible but one must be aware of the danger of not giving sufficient nourishment. Of fundamental importance in chronic diarrhea is the preparation of the food,

thorough cooking and straining through a hair sieve. It must not be forgotten that patients with a tendency to diarrhea are peculiarly sensitive to cold, even in the food. With alternating constipation and diarrhea, treatment should generally be addressed to the former. When the trouble in the intestines is located in the small intestine, control of the stool is indispensable as a guide to diet. The least error in the diet here is liable to bring on a relapse which will undo in a few days all that has been gained in months of treatment. On the whole, dietetic treatment of chronic diarrhea is a difficult task but in many cases results are highly gratifying. In few fields of dietetics are the results of individualization so unmistakable as here.

94. **Thrombosis of the Splenic and Portal Vein.**—Goldmann's patient was a man of 28, with symptoms suggesting Banti's disease—gastric hemorrhages and anemia at first and later the typical Banti syndrome. Necropsy revealed thrombosis of the portal and splenic vein traced to endocarditis with an infarct in the spleen nine years before the fatal outcome.

95. **Non-Gonorrheal Ophthalmia Neonatorum.**—Sussmann examined seventy-two infants with ophthalmia and found twenty-four cases in which the Prowazek-Halberstädter inclusion bodies were found in the conjunctival secretion; in two cases there was mixed infection with gonococci. The incubation period in twenty cases was two days in one, five days in one, six days in two, from seven to nine days in fourteen, fourteen days in one and fifteen days in one. The inclusion-bodies virus has therefore a longer incubation than the gonococcus, and it is probable that all the tardy cases of ophthalmia neonatorum are due to this cause. The secretion also differs from that with the gonococci, there is more tendency to hemorrhage, the course is more protracted and the cornea remains intact. Simple catarrh of the conjunctiva in the newborn is not of this character. He was not able to detect any connection between the cases and the trachoma of adults.

97. **Non-Gonorrheal Orchitis and Epididymitis.**—Stroink encountered several cases last year of inflammation of the testicle, primary or secondary to parotitis. By puncture and cultivation of the germs found he was able to obtain material for vaccine therapy. He also thus established that the *Bacillus fluorescens non liquefaciens* is able to set up disease of this kind.

98. **Late Injury of the Skin and Internal Organs after Roentgenotherapy.**—Schmidt warns that the new era of intensive dosage of the hard rays is liable to be followed by a crop of serious injuries of the deep organs as well as of the skin. He thinks the method is scarcely justified except for inoperable cancer of the cervix. He knows of instances in which after application of large doses of the hard rays, even filtered, after an interval of months up to a year and a half from the close of the Roentgen-ray treatment ulceration developed without there having been any erythema at the time or atrophy of the skin later. Irritation from without and unfavorable conditions for the circulation, as in the leg, favor the tardy ulceration and there is a possibility of trouble from this source in the deep-lying organs.

Medizinische Klinik, Berlin

August 10, IX, No. 32, pp. 1277-1316

100 Surgery of the Pancreas. Habs.
101 Kidney Calculi. (Zur Pathologie und Therapie der Nierensteinerkrankung.) W. Karo.
102 *Dread Neuroses and Vasomotor Disturbances. G. Flatau.
103 Diet at Health Resorts. (Kurgemässe Diätetik in deutschen Badeorten.) C. Pariser.
104 Influence of Thermal Douche Massage on the Elements of the Urine. E. Rothschuh.
105 Control of the Heart Functioning During Courses of Thermal Baths. J. Havas.
106 Examination of the Blood During Courses of Radium Emanations. (Blutuntersuchungen bei den verschiedenen Methoden der Radiumemanationstherapie.) J. Kemen.

102. **Dread Neuroses and Vasomotor Disturbances.**—Flatau's patients were all women in the two groups he here describes. In the first group the neurosis developed with accompanying urticaria, dyspnea, palpitations and dermography. The hands and finger joints and later the knee swelled up with the dread neurosis in one case, in addition to or alternating with urticaria. In the other group the dread neurosis was accompanied by morbid blushing and a feeling of inability to speak. The neurotic dread comes first, then the blushing and in one case nausea and retching, and afterward there is headache. In both groups a few applications of hypnosis brought material relief or a complete cure. The intermittent swelling of the knee still persists in the one case.

Münchener medizinische Wochenschrift

August 12, LX, No. 32, pp. 1753-1808

107 Cholesterin Stones. (Wie entstehen die reinen Cholesterinsteine?) L. Aschoff.
108 Serodiagnosis with Animal Placenta and Serum. (Die Abderhaldensche Reaktion mit Tierplazenta und mit Tierserum.) H. Schlimpert and E. Issel.
109 *Dependence of Kidney Functioning on the Nervous System. (Abhängigkeit der Nierenfunktion vom Nervensystem.) P. Jungmann.
110 Orthodiagraphy and Teleroentgenography of the Heart. (Methoden der Herzmessung.) H. Dietlen.
111 The Iodin Method of Sterilization Is Harmless for the Operator. (Bedingt die Methode der Hautdesinfektion mit Jodtinktur eine Gefahr der Jodintoxikation für den operierenden Arzt?) O. Jüngling.
112 *Pathology and Treatment of Diabetes Insipidus. J. Benario.
113 *Impalement and Its Treatment. (Pfählungsverletzungen; Prophylaxe und Therapie der Peritonitis.) F. Weber.
114 Rupture of Uterus after Pituglandol. G. Espent.
115 *Operative Treatment of Chronic Edema. W. Boecker.
116 Serodiagnosis of Cancer and Pregnancy. (Ueber künstlich herbeigeführte und natürlich vorkommende Bedingungen zur Erzeugung der Abderhaldenschen Reaktion und ihre Deutung.) E. Heilner and T. Petri. (Diagnostischer Wert der Abderhaldenschen Serumreaktion.) F. Bruck. (Zur Technik des Abderhaldenschen Dialysierverfahrens.) M. E. Goudsmit.
117 The Cholestol Reaction. (Zur Kenntnis der Liebermannschen Cholestolreaktion.) W. Autenrieth and A. Funk.

109. **Dependence of Kidney Functioning on the Nervous System.**—Jungmann reports research on rabbits inducing experimental polyuria by puncture of the fourth ventricle. He found that the amount of urine increased sometimes to three times what it had been before the puncture and this polyuria lasted for twelve or twenty-four hours. The proportion of sodium chlorid in the urine also increased regularly, in some instances up to ten times what it had been beforehand. His tests showed further that not the mere incision of the fourth ventricle nor the general anesthesia alone or together induced the above changes in the urine secretion; they did not develop until the puncture had been made through the ventricle into the fascicle of nerve-fiber to the side of the mesial sulcus. The change in the urine secretion occurred irrespective of whether the animals were given much or very little water during the period of the experiments. The animals lost in weight from the elimination of the water. The drying out of the body could be traced by the findings with the refractometer applied to the blood. Immediately after the puncture the blood became diluted, but as the polyuria progressed it became condensed. The blood never showed a larger proportion of sodium chlorid even when the percentage in the urine was markedly increased. The same effect followed each time the puncture was repeated, but the puncture had no effect unless it was made at the special "puncture point" on either side. Severing the splanchnic nerve seemed to have the same effect as the puncture, polyuria and increased output of sodium chlorid following in the same proportions. The puncture produced no effect if the splanchnic nerve had already been divided on both sides. The research confirms the importance of the nervous system in the matter of kidney functioning and that the splanchnic nerve conveys the impulse from the brain to the kidneys.

112. **Diabetes Insipidus.**—Benario reports seven cases which confirm the importance of the Wassermann test as clearing up the etiology of diabetes insipidus; specific treatment as for syphilis soon cured all the morbid manifestations. Polydipsia and polyuria as symptoms accompanying cerebral syphilis have long been known, especially syphilitic lesions in the intermediate part of the hypophysis. This part of the hypophysis seems to have a direct diuretic action. Gummatous tumors in the hypophysis, especially in the posterior lobe, evidently are capable of inducing diabetes insipidus. The development, retrogression under specific treatment and other

changes in these gummatous tumors readily explain the variability of the diabetes picture, and also the inefficacy of treatment if sclerotic changes have already become installed. Gummatous processes in the nasopharyngeal cavity are particularly liable to spread backward to the sella turcica and the hypophysis. With polyuria in the tertiary phase of syphilis, traces of destructive processes in the nasopharynx are common. In every case of diabetes insipidus, therefore, acquired or inherited, syphilis should be suspected even in the absence of any history or signs of it. Examination of the blood and of the cerebrospinal fluid by the Wassermann technic will aid in the differentiation.

113. **Prophylaxis of Peritonitis.**—Weber writes from the clinic in charge of Döderlein to extol the advantages in threatening cases of thorough rinsing out of the abdominal cavity with twenty-five or thirty quarts of physiologic salt solution at 40 C. (104 F.) under general anesthesia. This is done rapidly, the pelvis lowered to the utmost, rinsing out all the recesses and crevices and sopping up with sponges all the superfluous fluid. Then 30 c.c. of tepid 10 per cent. camphorated oil are poured in and distributed with swabs. In 200 cases in which these measures were applied, no injurious consequences could be discovered, while the outcome was satisfactory beyond all anticipations. The method is described here in connection with a case of impalement; a young woman sliding down a hayrick slid on the handle of a buried rake and it entered the vagina and abdomen for twelve or fourteen inches. A long wagon ride was necessary before the girl reached the hospital. The laparotomy next day showed that none of the viscera seemed to be injured. The abdominal cavity was rinsed as above described, the pelvis low, and after washing out quantities of blood the fluid finally came away clear, showing that there was no persisting hemorrhage anywhere. Then the camphorated oil was poured in and spread around, the tear in the peritoneum below the ovary sutured and smooth recovery followed.

115. **Operative Treatment of Chronic Edema.**—THE JOURNAL, Jan. 25, 1913, p. 328, described Kondoleon's method of treating chronic edema and elephantiasis by opening a communication between the deep and the superficial lymphatics. Boecker here reports a case of chronic edema in which he operated on the same principle. The patient was a woman of 58 who had had one breast removed on account of cancer, and the arm on this side swelled afterward until the upper arm measured 15 inches in circumference, the forearm over 13 and the hand nearly 13. He made an incision in the back of the arm 8 inches long, under local anesthesia, and cut out a patch of fascia 6 inches long by 1.5 inches wide, suturing the wound at once. By the end of a week the edema began to go down and become softer and although now, two months later, there is still considerable edema, yet it is soft and the woman can use her hand and is able to knit.

Wiener klinische Wochenschrift, Vienna

August 7, XXVI, No. 32, pp. 1297-1324

118 *Vascular Reflexes. (Gefässreflexe.) L. Hess and E. v. Bermann.
119 Vaccine Therapy of Gonorrhea. Brandweiner and O. Hoch.
120 Technic for Intravenous Injection of Neosalvarsan. L. R. v. Zumbusch.
121 *Local Diphtheria after Piercing the Ears. (Fall von Diphtherie nach Durchstechen der Ohrläppchen.) R. Pollak.
122 The Ptyalin Content of the Saliva. (Ptyalingehalt des Speichels.) B. Purjesz and O. Perl.
123 Inflammation-Inhibiting Action of Epinephrin. (Zur entzündungshemmenden Wirkung subkutaner Adrenalininjektionen.) F. Gaisböck.

118. **Vascular Reflexes.**—The vascular reflexes were tested in the research reported not only in healthy persons but in several with sclerodermia, advanced arteriosclerosis and syringomyelia. Among the interesting points thus learned is the fact that irritation applied to the skin is liable to entail a vasodilating reflex in conditions which apparently exclude participation of the spinal reflex arc.

121. **Diphtheria Following Piercing the Ears.**—An infant had its ears pierced and it developed a local diphtheric process in the outer ears and also in the lungs, soon proving fatal. Necropsy disclosed that the throat was entirely free from the diphtheritic process.

Zentralblatt für Chirurgie, Leipsic

August 9, XL, No. 32, pp. 1249-1288

124 *Fascia Flaps in Plastic Operations. (Transplantative Deckung grosser Defekte des Zwerchfells, der Brustwand und des Herzbeutels mit Fascienlappen.) K. Henschen. (Zur Nephropexie mittels freien Fascienstreifens.) E. Cordua. (Verbesserung der Lotheissen-Föderl'schen Radikaloperation der Schenkelhernien durch Anwendung der freien Aponeurosentransplantation.) R. Göbell.

August 16, No. 33, pp. 1289-1328

125 Operative Paralysis of the Triangularis Muscle. P. Manasse.
126 *Operation for Varices with Minute Incisions. (Operation der Varicen mit kleinsten Schnitten.) Holfelder.
127 Pathogenese of Hydrocele. D. G. Zesas.

124. **Fascia Flaps for Patching and Supporting Organs and Walls.**—Henschen writes from the surgical clinic in charge of Sauerbruch to report the successful outcome of extensive experimental research with implants of sheets of fascia to close large defects in the wall of the chest, in the diaphragm and in the pericardium, done under differential atmospheric pressure. He found it possible thus to close a large defect in the diaphragm, working through the pleura, and is confident that the same technic can be applied even with greater ease in the clinic.

Cordua reports the successful use of a broad strip of fascia to suspend the kidney in case of wandering kidney. The method differs from Kocher's technic in that Cordua passes the strip of fascia through the capsule of the kidney, tunneling under the capsule for about half the width of the kidney. This holds the strip in place without the necessity for sutures. The fascia sling thus provided can be fastened to a rib or muscle or aponeurosis as most convenient.

Göbell uses a narrow strip of fascia passed through the transverse and oblique muscles about 2 cm. above their lower margin to reenforce the closure of the canal in operating on a femoral hernia. The muscles are thus dragged down to below the canal and both ends of the fascia strip are then sutured together as they meet after one has been passed besides through the pectineal fascia.

126. **Minute Incisions for Operative Treatment of Varices.**—Holfelder outlines with a stain on the skin the most protruding veins as the patient stands. Then he gives a general anesthetic and expels the blood from the limb and makes incisions not over 1 or 2 cm. along the vein, and exposes and carefully isolates the vein, stripping it entirely free from all clinging tissue. The vein is then severed between two ligatures and the stump is seized with a clamp and carefully wound up on the clamp until the vein tears across. The technic is like that with which Thiersch pulls out a nerve. Holfelder has succeeded in thus pulling out strips of vein totalling on both legs 80 cm. in length. He says that the intima rolls inward as the vein tears, and thus there is no fear of after-hemorrhage and the tiny incisions can be closed at once. He merely ligates the central stump of the saphenous vein in the thigh and pulls out the distal stump alone. In some cases the operation on the leg alone answered the purpose, leaving the thigh intact.

Zentralblatt für Gynäkologie, Leipsic

August 9, XXXVII, No. 32, pp. 1181-1220

128 *Serodiagnosis of Pregnancy, etc. (Klinische Bedeutung des Abderhalden'schen Dialysierverfahrens.) A. Mayer.
129 *Eclampsia. (Zur Schnellentbindung bei der Eklampsie, mit einem Beitrag zur Aderlasstherapie der Eklampsie.) Nacke and Less.
130 *Stretching the Perineum to Start Reflex Contraction of the Uterus. (Ueber artifizielle Scheidendammdehnungen intra partum.) Rudolph.

August 16, No. 33, pp. 1221-1252

131 Importance of Suturing Tears in the Cervix as Prophylaxis of Local Cancer. (Die Trachelorrhaphie als Prophylaxe des Cervixkrebses.) R. Asch.
132 Treatment of Incipient Uterine Cancer. (Zur Therapie des Gebärmutterkrebses in den allerersten Anfängen.) K. Neuwirth.
133 Serodiagnosis of Pregnancy. J. B. Porchownick.
134 Advantages of Incision from Spine to Spine of the Pubis for the Alexander-Adams Operation; Fifteen Cases. (Alexander-Adams mit Tuberkulumschnitt.) G. Zickel.

128. **Clinical Importance of Abderhalden's Method of Serodiagnosis.**—Mayer declares that the contradictory findings reported by some experimenters with Abderhalden's technic are due to the fact that practitioners as a rule are not used to the painstaking exactness of chemically pure methods, and consequently conflicting results are merely because some imperfection has crept into the technic. With increased care and practice, the conflicting findings grow less and less frequent. The clinical importance is obvious of this serodiagnosis of pregnancy at its earliest inception and also after all other signs of it have subsided, as after abortion. In a case described, the suspicion of a recent abortion apparently was not confirmed by the scrapings of the uterus, but the serodiagnosis was positive. Renewed examination of the scrapings finally revealed decidua tissue. The reaction is positive with an extra-uterine as with a normal pregnancy, but it becomes negative in both after the tissues specially connected with the pregnancy have lost their vitality from the death of the fetus. Mayer reports further research with the test as applied in eclampsia and various complications of pregnancy. The response shows that the protective ferments involved keep constant, like the behavior of the blood. The response to the test also throws light on the functioning of the glands with an internal secretion, as also on metabolic disturbances and on cancer, as he illustrates with cases from his own experience. He suggests further that it may prove interesting to study racial differences in the reaction to the biologic tests.

129. **Venesection in Eclampsia.**—Less states that twenty-four of twenty-six women recovered under the ordinary measures; two were spontaneously delivered, the rest required active intervention. Among the patients were some with from twelve to forty seizures. Two of the patients succumbed. In another group of twenty-two cases venesection was applied, withdrawing from 250 to 1,200 c.c. of blood followed by saline infusion. Two in this group died also. One patient had no further seizures after the venesection; delivery occurred eight hours later. Three with eclampsia after delivery had only one seizure each after the venesection. The benefit seemed striking in another case of puerperal eclampsia. None of the women died whose eclampsia did not develop until after delivery.

130. **Artificial Stretching of the Perineum During Delivery.**—Rudolph calls attention to the reflex contractions of the uterus which occur when the perineum is stretched. The head of the fetus striking the perineum sets up vigorous contractions of the uterus by this reflex action; it is started also by introduction of the curet into the uterus. To induce the contraction when the fetal head is unable to reach down to the perineum or when the labor pains are growing weak from any cause, he introduces into the vagina his forefinger and middle finger pressed together and then spreads them apart sideways and presses them backward, stretching the perineal portion of the vulva and massaging it lightly at the same time. The uterus responds at once with contractions and the procedure has enabled him to get along without forceps in a number of cases in which their use otherwise would have been indispensable. The stretching and mobilizing of the perineum in this way materially facilitates the passage of the fetal head when it comes along, as the perineal tissues are rendered more elastic and the parturient is thus saved considerable physical stress and pain. He has not always been able to avoid the necessity for side laceration or incision, but he always knew the cases in which this was impending as the tissues refused to yield to his stretching.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 14, XXXIV, No. 97, pp. 1007-1014

135 *The Test for Neutral Sulphur in the Urine. (Sulla prova dello zolfo neutro urinario.) L. Dozzi.

135. **Sulphur Reaction in the Urine as Sign of Cancer.**—Dozzi reviews his experience with fifty patients to whom he applied the test mentioned in THE JOURNAL, Aug. 10, 1912, p. 492, and elsewhere. The test was invariably negative in all his patients free from cancer or tuberculosis, but the frequency of the positive reaction in tuberculous patients detracts from its value as a sign for cancer, although it is rarely that cancer and tuberculous could be confused. In three of his cancer patients the neoplasm had been removed before the test was applied, and these were the only cancer cases that gave a negative response.

Policlinico, Rome

August, XX, Medical Section No. 8, pp. 337-384

136 *Reinfection with Syphilis or Superinfection. (Contributo clinico e osservazioni critiche sulle reinfezioni, superinfezioni e recidive sifilitiche a tipo primario.) G. Mariani.
137 Research on Rabies. (Sulla importanza per la eziologia della rabbia, di talune formazioni libere descritte di recente.) I. Righi.
138 The Nitrogen Compounds in the Urine in Febrile Diseases. (Il comportamento dei composti azotati nelle urine in alcune malattie febbrili.) U. Daretti. Commenced in No. 7.
139 The Changes which Accompany the Putrefaction of the Blood-Serum. (Di alcune modificazioni che accompagnano la putrefazione del siero di sangue.) G. B. Zanda.

August, Surgical Section No. 8, pp. 337-384

140 Treatment of Fistulas and Bone Cavities in the Mouth. (Otturazione di cavità patologiche delle ossa in odontoiatria.) A. Chiavaro.
141 Experimental Research and Behavior of Epiphyseal Cartilage in Operations on Joints. (Comportamento delle cartilagini epifisarie negli interventi operativi articolari.) G. Razzaboni.
142 Primary Endotheliomas in the Bones; Two Cases. (Endotelioma primitivo delle ossa.) M. Abetti.
143 Treatment of Undescended Testicle. (Alcune osservazioni sopra il trattamento chirurgico dell'ectopia testicolare.) G. Piccioli.
144 Relations between the Hypophysis and the Ovaries or Testicles. (Sui rapporti tra ghiandole sessuali ed ipofisi.) V. Barnabo.

136. **New Infection or Superinfection with Syphilis?**—Mariani tabulates the details of four cases from his own practice at Pavia and of twenty-six from the literature in which an apparently primary syphilitic lesion developed from a few months to several years after the actual primary infection. Some date from before the discovery of salvarsan; in some cases there had been mercurial or salvarsan treatment or both, in others no treatment had been applied. In MacDonald's case there had been scant mercurial treatment after which six years passed without any manifestations or therapeutic measures. Then an apparently primary syphilitic lesion developed near the scar from the first, on the corona. In Mariani's own cases salvarsan had been given to each patient and the interval was from four months to two years. He discusses the various theories advanced to explain such eventualities, classifying the cases according as a new cycle of the specific infection developed or as either of the cycles was incomplete.

Riforma Medica, Naples

August 9, XXIX, No. 32, pp. 869-896

145 Persisting Cholesterinuria. (Caso raro di colesterinuria vera duratura.) M. Barberio.
146 Motor Aphasia and Deafness Following Epileptic Seizures. (Afasia motrice e sordità postaccessuale.) A. Perugia.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

July 19, LVIII, No. 3, pp. 153-212

147 *The Special Prison at Scheveningen. (De bijzondere Strafgevangenis te Scheveningen.) J. W. Deknatel.
148 *Polygonum Aviculare L. as a Laity Remedy for Diabetes Mellitus. (Polygonum Avic. L. als volksmiddel tegen diabetes mellitus.) E. C. van Leersum.

July 26, No. 4, pp. 213-284

149 *The Value of the Dry Test-Meal in Estimating the Motor and Secretory Function of the Stomach. (De waarde van het drooge proefontbijt van Triscuit ter bepaling van de motorische en secretorische functie der maag.) N. P. van Spanje.

August 2, No. 5, pp. 285-368

150 Para-Articular Correction of Joint Deformities. (Over paraarticulaire correctie van gewrichtsmisvormingen.) M. A. Correa.
151 Epidemic Poliomyelitis: Five Cases. (Eenige gevallen van de ziekte van Heine-Medin.) W. Beijermann.
152 The Movement for Training Both Hands. (De "Ambidextrie-beweging.") D. Herderschee.

147. **The Prison at Scheveningen.**—This new institution is for sifting out the criminal insane and criminals, and its first year's report is here presented. The article also contains a very interesting section on the legislation of other

countries in regard to the criminal insane, emphasizing particularly wherein the English "Mental Deficiency Bill" differs from other criminal laws.

148. **Doorweed or Birdweed as a Lay Remedy for Diabetes Mellitus.**—Van Leersum states that after making many tests he did not derive any benefit from the use of this herb.

149. **The Dry Test-Meal.**—Van Spanje calls attention to the advantages of a dry test-meal, saying that triscuit seems to be particularly adapted for a test-meal without fluids. It is put up in packages of twenty-four biscuits each and is made of the whole wheat flour. The gastric juice has no or very little influence on it. This test-meal has several advantages over others, as the exact amount of gastric juice can be estimated, because no liquids are given with it.

Medizinskoe Obozrienie, Moscow

LXXIX, No. 8, pp. 647-734

153 Atypical Forms of Pseudoleukemia. (Hodgkin's Disease.) G. A. Shamessoff.
154 Gangrenous Sore Throat in a Child. B. A. Egiz.
155 Present Status of Roentgenotherapy in Gynecology. M. I. Karlin.
156 Pseudoleukemia. (Granuloma malignum. Lymphogranulomatosis.) G. G. Vulfius.

Petersburger medizinische Zeitschrift

August 14, XXXVIII, No. 15, pp. 175-187

157 *Diagnostic Importance of Daily Paroxysms of Pain in Women. (Periodische Schmerzen bei Frauen.) H. Greife.

157. **Daily Paroxysms of Pain as Sign of Uterine Cancer.**—Greife reports a case which sustains the diagnostic importance of "Simpson's pains" as stated recently in THE JOURNAL, Sept. 14, 1912, p. 908. His patient was an unmarried woman of 50, healthy until April, 1912, when she began to have paroxysms of pain every afternoon and later also in the evening. The pains were very severe, starting in the lower abdomen and radiating down into the legs, not relieved by heat or cold, the paroxysm lasting about four hours on an average at first and later from five to six hours, with no let-up except under morphin. Nothing could be found to explain the pains until palpation through the rectum revealed a tumor in the uterus, supposed to be a myoma. On account of the intact hymen, supravaginal amputation of the uterus was done by a laparotomy. On opening the excised uterus two days later it was found filled with a cancerous growth. The abdomen was opened again in two or three weeks and the rest of the uterus then cut out. The patient was relieved from the first of all pain and has been in good health since.

Semana Medica, Buenos Aires

July 10, XX, No. 28, pp. 61-116

158 Necessity for Mastering Technic for Suture of Vessels in Readiness for Emergencies. (Cirugia vascular.) B. N. Calcagno.
159 Vaccine Therapy of Gonorrhea. (El nucleidoproteido gonococcico en el tratamiento de las complicaciones blenorragicas.) R. A. Marotta.
160 Glaucoma. (Tonometria. Operacion de Elliot. Pronostico del glaucoma.) J. M. Zubizarreta.
161 Epithelioma in Sheep. (Una enfermedad nueva del ganado ovino.) M. Beatti.
162 *Test for Seminal Fluid. (Todavia otro nuevo reactivo del esperma.) A. Lecha-Marzo and A. Conejero.
163 Technic for Thoracocentesis. D. A. Rojas.
164 *The Urochromogen Reaction in the Urine of the Tuberculous. (La reaccion de Moritz-Weiss—prueba del permangano—en la orina de los tuberculosos.) G. Vitri.

162. **Medicolegal Examination of Seminal Stains.**—This article states that the rectangular and pointed crystals obtained with the Florence reagent are not so characteristic of seminal fluid as the ovoid crystals which occur singly or in groups. These ovoid crystals were discovered simultaneously last year by De Dominicis and Baecchi not only with the Florence reagent but with Dragendorf's. By modifying the Florence reagent a little these ovoid crystals show up much better, and Lecha-Marzo and Conejero are convinced that the round and ovoid crystals are the only ones for which the seminal fluid is directly responsible, the rectangular and pointed crystals being crystals of the decomposition products of lecithin, as Richter has pointed out. Their reagent is like the Florence only that it contains more iodin: Potassium iodid 1 gm.; iodin 0.5 gm.; distilled water, 25 gm. The Mangani reagent used in testing alkaloids also shows up the crystals unusually well. A microscope of only 500 diameter power is ample for the purpose.

164. **Urochromogen in the Urine.**—Vitri regards Weiss' permanganate test for urochromogen in the urine as an important aid in the diagnosis and especially in the prognosis of tuberculosis. He has applied the test to 150 tuberculous patients; the reaction is slight or absent in extrapulmonary tuberculous lesions but in acute pulmonary tuberculosis it is almost invariably positive, while it is negative during the first stage of tuberculosis running a chronic course. Of thirty-two tuberculous patients who gave a decided positive reaction, fourteen have died since, while only three have died of the fifty-six giving a negative response to repeated applications of the test, and of these three two died from an intercurrent disease. Weiss says that the urochromogen is the substance which gives the diazo reaction or its precursor, but according to Vitri's experience the urochromogen test is more sensitive than the diazo. The findings paralleled each other with the two tests in forty-eight cases, but in six others the urochromogen test was positive while the other was negative. He never obtained a positive diazo with a negative urochromogen reaction.

The findings were also remarkably concordant with the urochromogen test and the skin tuberculin test. In twenty-three cases the skin tuberculin test elicited a very slight or no response, the body evidently being incapable of a pronounced reaction, and in these cases the urochromogen reaction was always very pronounced and thirteen in this group have died since. In forty-three other cases the skin tuberculin reaction was very pronounced, while the urochromogen reaction was slight or negative, and the prognosis was comparatively favorable in all these cases. In nine cases both reactions were pronounced but the favorable outlook suggested by the pronounced response to the skin tuberculin test was not realized; in fact, eight of the patients died not long after as the pronounced response to the urochromogen test had foretold. In only four of the total cases were the urochromogen findings misleading. The urochromogen test is applied by filling a test-tube to one-third with the urine to be examined. It is then diluted with twice its volume of water, and well mixed. Half of the fluid is then poured into a second tube of the same size, and to one of the tubes are added three drops of a 1 per cent. solution of potassium permanganate in distilled water. The tube is then shaken to mix the contents. A yellow tint appears in case of a positive response as the two tubes are compared. A little sugar, albumin or urobilin in the urine does not interfere with the reaction.

Hospitalstidende, Copenhagen

August 6, LVI, No. 32, pp. 933-956

165 *The Wassermann Test Applied to the Cadaver. (Betydningen af Wassermanns Reaktion, anstillet paa Ligblod.) H. Boas and H. Eiken.

165. **The Wassermann Test Applied to the Cadaver.**—Boas and Eiken state that the usual technic applied to the cadaver gives unreliable findings as numbers of positive responses are obtained when there is nothing to suggest syphilis otherwise. By reducing the dose to half the ordinary amount, namely 0.1 c.c. instead of 0.2 c.c., the reaction becomes much more reliable. Only three out of 326 controls gave a positive reaction with this technic. Negative findings in the cadaver are less significant than negative findings in the clinic. They obtained a negative reaction in five of twenty-nine cases of untreated active syphilis.

Ugeskrift for Læger, Copenhagen

August 14, LXXV, No. 33, pp. 1359-1404

166 Formaldehyd Sterilization of Woolen Carpets and Rugs. (Undersøgelser over Uldtæppedesinfektion med Formaldehyd.) A. Elgstrøm and A. Erlandsen. Commenced in No. 32.
167 Twenty Years of Night Medical Service at Police Station. (Natpraksis—1891-1912.) K. Nørregaard.